KA / BG-GPO/2515/WPP-47/2006-2008



ಕರ್ನಾಟಕ ರಾಜ್ಯಪತ್ರ

ಅಧಿಕೃತವಾಗಿ ಪ್ರಕಟಿಸಲಾದುದು

ಸಂಪುಟ ೧೪೧	ಬೆಂಗಳೂರು, ಗುರುವಾರ, ಡಿಸೆಂಬರ್ ೧೪, ೨೦೦೬ (ಮಾರ್ಗಶಿರ ೨೩, ಶಕ ವರ್ಷ ೧೯೨೮)	ಸಂಚಿಕೆ ೪೯

ಭಾಗ – ೪

ರಾಜ್ಯದ ವಿಧೇಯಕಗಳ ಮತ್ತು ಅವುಗಳ ಮೇಲೆ ಪರಿಶೀಲನಾ ಸಮಿತಿಯ ವರದಿಗಳು, ರಾಜ್ಯದ ಅಧಿನಿಯಮಗಳು ಮತ್ತು ಅಧ್ಯಾದೇಶಗಳು, ಕೇಂದ್ರದ ಮತ್ತು ರಾಜ್ಯದ ಶಾಸನಗಳ ಮೇರೆಗೆ ರಾಜ್ಯ ಸರ್ಕಾರವು ಹೊರಡಿಸಿದ ಸಾಮಾನ್ಯ ಶಾಸನಬದ್ಧ ನಿಯಮಗಳು ಮತ್ತು ರಾಜ್ಯಾಂಗದ ಮೇರೆಗೆ ರಾಜ್ಯಪಾಲರು ಮಾಡಿದ ನಿಯಮಗಳು, ಹಾಗೂ ಕರ್ನಾಟಕ ಉಚ್ಚ ನ್ಯಾಯಾಲಯವು ಮಾಡಿದ ನಿಯಮಗಳು.

ಸಂಸದೀಯ ವ್ಯವಹಾರಗಳು ಮತ್ತು ಶಾಸನ ರಚನೆ ಸಚಿವಾಲಯ

ಅಧಿಸೂಚನೆ

ಸಂಖ್ಯೆ: ಸಂವ್ಯಶಾಇ 54 ಕೇನಿಪ್ರ 2006, ಬೆಂಗಳೂರು, ದಿನಾಂಕ: 22ನೇ ಜೂನ್ 2006

2006ನೇ ಸಾಲಿನ ಮಾರ್ಚ್ 10ನೇ ದಿನಾಂಕದ ಭಾರತ ಸರ್ಕಾರದ ಗೆಜೆಟ್‌ನ ವಿಶೇಷ ಸಂಚಿಕೆಯ ಭಾಗ–II ಸೆಕ್ಷನ್ 3(i) ರಲ್ಲಿ ಪ್ರಕಟವಾದ ಈ ಕೆಳಕಂಡ GSR 165(E) (Notification No. TC II/2003/98/Rules) ದಿನಾಂಕ: 20.3.2006 ಅನ್ನು ಸಾರ್ವಜನಿಕರ ಮಾಹಿತಿಗಾಗಿ ಕರ್ನಾಟಕ ರಾಜ್ಯ ಪತ್ರದಲ್ಲಿ ಮರು ಪ್ರಕಟಿಸಲಾಗಿದೆ.

MINISTRY OF RAILWAYS

(Railway Board)

NOTIFICATION

New Delhi, the 20th March, 2006

G.S.R. 165(E).- In exercise of the powers conferred by sub-section (1) of Section 60 of the Railways Act, 1989 (24 of 1989), the Central Government hereby makes the following rules further to amend the Railway Passengers (cancellation of ticket and refund of fare) Rules, 1998, namely :-

1. (1) These rules may be called Railway Passengers (Cancellation of Ticket and Refund of Fare) fifth Amendment Rules, 2006.

(2) They shall come into force on the date of their publication in the official Gazette. In the Railway Passengers (cancellation of ticket and refund of fare) Rules, 1998,-

(I) for rule 9, the following rules shall be substituted, namely :-

"9. Postponement or preponement of journey on a reserved, RAC or waitlisted ticket-

(1) Postponement of journey :

(a) Confirmed Tickets : Postponement of journey on confirmed tickets shall be allowed in the same or any higher class, by any subsequent train on the same day or any subsequent day, for same or any longer destination, provided that :

(i) confirmed or RAC or waiting list accommodation is available in the train in which fresh reservation is required ;

(ii) fresh reservation fee for the class for which reservation is required is paid, in case of tickets surrendered during working hours and at least twenty four hours before the scheduled departure of the train in which originally booked ;

(iii) 25% fare of already booked ticket is paid as cancellation charges, in case of tickets surrendered during working hours and within twenty four hours and four hours before scheduled departure of the train in which originally booked ;

(iv) 50% fare of already booked ticket is paid as cancellation charges, in case of the tickets surrendered during working hours and within four hours before the scheduled departure and upto the maximum time limits mentioned in rule 6(i) (c) (i.e. three or six or twelve hours, depending on distance) after actual departure of the train in which originally booked ;

(b) : RAC and Wait listed Tickets : Postponement of journey on RAC and Wait listed Tickets shall be allowed in the same or higher class, by any subsequent train on the same or any subsequent day, for same or any longer destination, provided that -

(i) confirmed or RAC or waiting list accommodation is available in the train in which fresh reservation is required;

(ii) ticket is surrendered during working hours and upto the maximum time limits mentioned in rule6(i) (c) (i.e. 3 or six or twelve hours, depending on distance) after actual departure of the train in which originally booked;

(iii) clerkage charge is paid;

(2) Preponement of journey : Preponement of journey on confirmed, RAC and wait listed tickets shall be allowed in the same or any higher class, by any earlier train on the same day or any earlier day, for same or any longer destination, provided that :-

(a) confirmed or RAC or waiting list accommodation is available in the train in which fresh reservation is required ;

(b) the ticket is surrendered during the working hours of the reservation office and at least six hours before the scheduled departure of the train in which reservation is required or before preparation of the reservation chart, whichever is later ;

(c) fresh reservation fee for the class for which reservation is required is paid, in case of preponement on confirmed tickets ; and

(d) clerkage charge is paid, in case of preponement on RAC and wait listed tickets;

(3) If there is difference in fares for originally booked journey and revised journey, the difference of fare shall be refunded or recovered, as the case may be, subject to the provisions of sub rule (1) and (2) of rule 9 above.

(4) Postponement or Preponement of journey under the sub-rule (1) or sub-rule (2) shall be allowed only once.

(5) The Postponement or Preponement of normal train ticket journeys will not be applicable against Tatkal Quota even on payment of Tatkal charges.

(6) If the ticket, on which journey has been altered under the sub-rules (1) or (2) is cancelled, cancellation charges shall be payable as follows :-

(a) cancellation charges as would have been due if the ticket for original reservation had been cancelled at the time of postponement or preponement of journey, and

(b) cancellation charges due in respect of ticket for altered reservation as if this altered reservation is a fresh reservation.

(c) In cases where 25% or 50% cancellation charges were realized at the time of modification of journey, the cancellation charges mentioned in clause (a) shall not be levied again and the cancellation charges mentioned in clause (b) only shall be levied."

(II) in rule 17, in sub-rule (4),-

(i) The contents of para (ii) shall be merged in the end of para (i) of sub-rule (4); and

(ii) The following para may be inserted in para (ii) :

"The 10% or 25% as the case may be, of fare collected under sub-rule (3) (i) for issuing duplicate ticket before preparation of reservation chart, against lost or misplaced reserved or RAC tickets, shall be refundable from PRS terminals at destination station on completion of journey, after deducting the usual clerkage per passenger. Refund shall be granted on verification from PRS that no one has taken refund

on the concerned lost or misplaced ticket. Refund shall be admissible, on surrendering the duplicate ticket, during working hours of reservation office, upto three days of arrival of the train."

(III) in rule 4, for the words ``station master shall lavy a clerkage of rupees ten per passenger for cancellation of unreserved or wait-listed and RAC tickets", the following shall be substituted:

"station master shall levy a clerkage of rupees twenty per passenger for cancellation of unreserved or wait-listed or RAC tickets, except for second class unreserved tickets where the clerkage of rupees ten only shall be levied."

(IV) in clause (a) of sub-rule (1) of rule 6, for the words (i) ``Rupees fifty", substitute the words "Rupees seventy", (ii) "Rupees thirty", substitute the words``Rupees sixty", (iii) "Rupees twenty", substitute the words "Rupees forty" and (iv) "Rupees ten", substitute the words "Rupees twenty"

[F.No. TC 11/2003/98/Rules]

Ms. U. HAZARIKA, Director (Passenger Marketing)

Footnote :- The principal rules were published vide number G.S.R. 410 (E), dated the 24th July, 1998 and further amended vide number G.S.R. 1(E) dated the 1st January, 2000, number G.S.R 212 (E) dated 1st March, 2000, number G.S.R 937 (E) dated 27th December 2000 and number G.S.R 145 (E) dated 1st March, 2001.

ಕರ್ನಾಟಕ ರಾಜ್ಯಪಾಲರ ಆದೇಶಾನುಸಾರ ಮತ್ತು ಅವರ ಹೆಸರಿನಲ್ಲಿ,

ರಿಚಾರ್ಡ್ ಲೋಬೋ

ಪಿ.ಆರ್. 53

ಸಹಾಯಕ ಪ್ರಾರೂಪಕಾರ ಮತ್ತು ಪದನಿಮಿತ್ತ
ಸರ್ಕಾರದ ಉಪ ಕಾರ್ಯದರ್ಶಿ,
ಸಂಸದೀಯ ವ್ಯವಹಾರಗಳು ಮತ್ತು ಶಾಸನ ರಚನೆ ಇಲಾಖೆ.

ಅಧಿಸೂಚನೆ

ಸಂಖ್ಯೆ: ಸಂವ್ಯಶಾಇ 56 ಕೇನಿಪ್ರ 2006, ಬೆಂಗಳೂರು, ದಿನಾಂಕ: 23ನೇ ಜೂನ್ 2006

2006ನೇ ಸಾಲಿನ ಮಾರ್ಚ್ 22ನೇ ದಿನಾಂಕದ ಭಾರತ ಸರ್ಕಾರದ ಗೆಜೆಟ್‌ನ ವಿಶೇಷ ಸಂಚಿಕೆಯ ಭಾಗ–II ಸೆಕ್ಷನ್ 3(i) ರಲ್ಲಿ ಪ್ರಕಟವಾದ ಈ ಕೆಳಕಂಡ GSR 171(E) [Order No.3(5)/2003-SP] ದಿನಾಂಕ: 22.3.2006 ಅನ್ನು ಸಾರ್ವಜನಿಕರ ಮಾಹಿತಿಗಾಗಿ ಕರ್ನಾಟಕ ರಾಜ್ಯ ಪತ್ರದಲ್ಲಿ ಮರು ಪ್ರಕಟಿಸಲಾಗಿದೆ.

MINISTRY OF CONSUMER AFFAIRS, FOOD AND PUBLIC DISTRIBUTION

(Department of Food and Public Distribution)

ORDER

New Delhi, the 22nd March, 2006

G.S.R. 171 (E)/Ess. Com./ Sugarcane.- In exercise of the powers conferred by clause 3 of Sugarcane (Control) Order, 1966 and having regard to the various factors mentioned in sub-clause (1) thereof, the Central Government, after consultation with such Authorities, Bodies and Associations as are considered necessary by it to be consulted and on the basis of the basic minimum price of sugarcane at Rs. 74.50 per quintal linked to a basic recovery of 8.5% sugar subject to a premium of Rs. 0.88 for every 0.1% point increase in the recovery above that level hereby fixes the price specified in column (4) of the Schedule hereto annexed as the minimum price that shall be payable by the owners of the vacuum pan process sugar factory specified in the corresponding entry in column (3) of the said Schedule or their agents for the sugarcane delivered at the gate of the factory or any purchasing centre for the sugar year 2004-05 ending the 30th September, 2005 subject to the rebates payable therefor under clause 3A of the said Order.

SCHEDULE

Serial Number	Code Number	Name of the factory	Minimum sugarcane price in Rupees per quintal
1	2	3	4
		Andhra Pradesh	
1	44601NCS Gayatri	NCS Gayatri Sugar Ltd., TSR Town, 6-3-1090, Rajbhajwan Road, A.P	91.22
		Haryana	
1	01101 Rohtak	The Haryana Cooperative Sugar Mills Ltd., P.O. Rohtak-124001, Haryana.	90.34

1	2	3	4
Karnataka			
1	32501 Aland	M/s. Sahakari Sakkare Karkhane, Niyamit, P.O. Bhashnoor, Tehsil Aland, District Gulbarga, Karnataka-585302.	92.10
2	40601 Kupatgiri	The Managing Director, Shri Bhagyalaxmi SSk Ltd., Kupatgiri, District Belgam, Karnataka.	89.46
Maharashtra			
1.	35801 Bodegaon	M/s. Jai Kishan Sahkari Sakhar Karkhana Ltd., Mungsaji Nagar, Bodegaon, District Yeotwal, North Maharastra.	91.22
Uttaranchal			
1.	49201 Libberheri	Uttam Sugar Mills Ltd., Village Libberheri, District Haridwar.	92.10

[No.3(5)/2003-SP]

Dr. JOYI. CHEENATH, Jt. Secy.

ಕರ್ನಾಟಕ ರಾಜ್ಯಪಾಲರ ಆದೇಶಾನುಸಾರ ಮತ್ತು ಅವರ ಹೆಸರಿನಲ್ಲಿ,

ರಿಚಾರ್ಡ್ ಲೋಬೋ

ಪಿ.ಆರ್. 54

ಸಹಾಯಕ ಪ್ರಾರೂಪಕಾರ ಮತ್ತು ಪದನಿಮಿತ್ತ
ಸರ್ಕಾರದ ಉಪ ಕಾರ್ಯದರ್ಶಿ,
ಸಂಸದೀಯ ವ್ಯವಹಾರಗಳು ಮತ್ತು ಶಾಸನ ರಚನೆ ಇಲಾಖೆ.

ಅಧಿಸೂಚನೆ

ಸಂಖ್ಯೆ: ಸಂವ್ಯಶಾಇ 61 ಕೇನಿಪ್ರ 2006, ಬೆಂಗಳೂರು, ದಿನಾಂಕ: 23ನೇ ಜೂನ್ 2006

2006ನೇ ಸಾಲಿನ ಮಾರ್ಚ್ 17ನೇ ದಿನಾಂಕದ ಭಾರತ ಸರ್ಕಾರದ ಗೆಜೆಟ್‌ನ ವಿಶೇಷ ಸಂಚಿಕೆಯ ಭಾಗ–II ಸೆಕ್ಷನ್ 3(ii) ರಲ್ಲಿ ಪ್ರಕಟವಾದ ಈ ಕೆಳಕಂಡ S.O.357(E) [Notification No.F.No S-32 017/02/2005-WC.(MW) ದಿನಾಂಕ: 17.3.2006 ಅನ್ನು ಸಾರ್ವಜನಿಕರ ಮಾಹಿತಿಗಾಗಿ ಕರ್ನಾಟಕ ರಾಜ್ಯ ಪತ್ರದಲ್ಲಿ ಮರು ಪ್ರಕಟಿಸಲಾಗಿದೆ.

MINISTRY OF LABOUR AND EMPLOYMENT

NOTIFICATION

New Delhi, the 17th March, 2006

S.O. 357(E).- Whereas the minimum rates of wages payable to the employees employed in the scheduled employments in Red Oxide Mines, Quartzite and Silica Mines, Granite Mines, Steatite Mines (including Mines producing Soap Stone and Talc), Ochre Mines, Asbestos and, Fire Clay Mines, Copper Mines, Uranium Mines, Iron Ore Mines, Hematite Mines, Gypsum and Barytes Mines, Rock Phosphate Mines chromite mines, Magnetite Mines, Graphite Mines, Dolomite Mines, China Clay and White Clay Mines, Wolfram Mines, Manganese Mines, Felspar Mines, Bauxite Mines, Marble and Calcite Mines and Mica Mines were last published in the Gazette of India, Extraordinary, Part II Section 3 sub-section (ii) vide notification Number S.O.9 (E), dated the 3rd January, 2002.

Now, therefore in exercise of the powers conferred by clause (b) of sub-section (1) of section (3) read with sub-section (3) thereof and clause (i) of sub-section (1) section 4 of the Minimum Wages Act, 11 of 1948, the Central Government in supersession of the earlier Notification Number S.O. 9 (E), dated the 3rd January, 2002 makes the following draft proposal for revising the minimum wages per day per employee payable in the scheduled employments listed in Para 1 above and the proposal is hereby published as required under clause (b) of sub-section (1) of section 5 of the said Act for information of all those persons who are likely to be affected thereby and therefore notice is hereby given with the stipulation that the said draft proposal shall be taken into consideration on expiry of a period of two months from the date on which copies of this notification are published in the Official Gazette and are made available to the public.

Any objection or suggestion which may be received from any person or organization with respect to the said draft proposal before te expiry of the period so specified will be duly considered by the Central Government. The communication should be addressed to the Secretary, Ministry of Labour and Employment. Wage Cell, Shram Shakti Bhawan, Rafi Marg, New Delhi-110001.

DRAFT PROPOSAL

The revised minimum rates of wages shall consist of (a) basic rates of wages as set out in columns (3) and (4) of Part -I of the Schedule payable to the categories of employees mentioned in the Schedule and (b) a special allowance. The rate of special allowance shall be adjusted by the Chief Labour Commissioner (Central) at the interval of six months commencing on the 1st October and the 1st April every year on the basis of average cost of living index number for the preceding period of six months

ending on the 30th June and the 31st December, respectively at the rates mentioned in part II of the Schedule. The categorization of workers will be as brought out in Part III of the Schedule.

SCHEDULE
PART-I

Minimum Rates of Basic Wages per Day in Rupees.

Serial Number	Categories of employees	Above Ground	Below Ground
(1)	(2)	(3)	(4)
1.	Unskilled	66.00	78.00
2.	Semi Skilled/Unskilled Supervisory	78.00	94.00
3.	Skilled	94.00	115.00
4.	Highly Skilled	115.00	137.00

PART-II

Rate of Special Allowance for every point rise or fall in Consumer Price Index (IW) number Beyond 526 points which is the six monthly average of Consumer Price Index (IW) for the period ending the June, 2005.

Serial Number	Categories of employees	Above Ground	Below Ground
(1)	(2)	(3)	(4)
1.	Unskilled	13 paise	15 paise
2.	Semi skilled/Unskilled Supervisory	15 paise	18 paise
3.	Skilled	18 paise	22 paise
4.	Highly skilled	22 paise	25 paise

Part III
CLASSIFICATION OF WORKERS
UNSKILLED WORKERS

1.	Chowkidar	2.	Cleaner	3.	Dresser/Dressing Mazdoor
4.	Labourer	5.	Loader	6.	Mazdoor (M/F)
7.	Messanger(M/F)	8.	Trammer	9.	Caretaker (Except in Copper, Chromite and Graphite mines where it is semi-skilled)
10.	Office Peon/Peon (except in Bauxite Mines)	11.	Sweeper (M/F)	12.	Carrier
13.	Number Taker	14.	Trolly Triper	15.	Water Carrier
16.	Hole cutter	17.	Earth Cutter	18.	Survey Khalasi
19.	Khalasi not Attending to machines	20.	Carrier (Stone)	21.	Cartman
22.	Concrete (Hand Mixer)	23.	Driver (Mule, Bullock, Camel, Donkey)	24.	Lampman
25.	Petrol Man	26.	Waterman	27.	Belder/Beldar (Canteen)
28.	Coolie	29.	Breaker (using Manual appliances)	30.	Cook-helper
31.	Office Boy	32.	Watchman/ Chowkidar	33.	Quarry Worker
34.	Jelly Maker	35.	Over burden remover	36.	Waste removing mazdoor
37.	Unloader	38.	Excavating Labour	39.	Digger
40.	Butcher	41.	Attender	42.	Compressor Attendant
43.	Lorry Helper	44.	Surface loader	45.	Wood Cutter
46.	Surface Mukar	47.	Underground Mukar	48.	Helper

and any other categories of workers by whatever name called which are unskilled.

SEMI-SKILLED WORKERS/ UNSKILLED SUPERVISORY

1.	Bhisti	2.	Assistant Driller	3.	Miner
4.	Butler/Cook	5.	Breaker (using Mechanical appliances)	6.	Crech Ayah/Ayah/ Untrained Crech Attendant
7.	Untrained Mate/ Mining Mate/ Mate without competency certificate Under Metalli-aferous Mines Regulations 1961	8.	Oilman/Oiler	9.	Head Chowkidar
10.	Helper (Mason, Carpenter, Blacksmith,	11.	Tindals	12.	Muccadam (without competency certificate under Metalliferous Bulldozer Driver Mines Regulations, 1961)
13.	Pump Attendent (exept in Gypsum, Barytes and Rock Phosphate)	14.	Khalasi (bulldozer) Pump Khalasi/ Dumper Khalasi/ Compressor Khalasi	15.	Khalasi attending to Machines
16.	Quarry Man	17.	Quarry Operator	18.	Stocker
19.	Storeman	20.	Thatcher	21.	Thoomba Man
22.	Trolley Man	23.	Jamadar	24.	Bearer
25.	White Washer	26.	Breaks Man	27.	Topaz
28.	Topker	29.	Helper (Loco, Crane,	30.	Edge Runner Truck)
31.	Pack Wallers	32.	Rock Wallers	33.	Jack Hammer
34.	Pillarman	35.	Banks Man	36.	Cash Guard
37.	Cheeker	38.	Dhobi (M/F)	39.	Fireman (except in Mica Mines where it is skilled)
40.	Hammer Man	41.	Grinder	42.	Greaser
43.	Mali/Gardener	44.	Points Man	45.	Attendant
46.	Telephone Attendant	47.	Boiler Man (without certificate)	48.	Assistant Blaster
49.	Crusher Operator	50.	Lamp room Incharge/ Attendant	51.	Sampler/Sampler Boy
52.	Stone Cutter and Dresser	53.	Dresser Grade-II	54.	Security Guard (Unarmed)/Head Chowkidar
55.	Sepoy	56.	Meter Reader	57.	Caretaker in Copper, Chromite and Graphite Mines.
58.	Assistant Drill Operator	59.	Canteen Boy	60.	Butler-cum-Cook
61.	Ventilation Fan Attendant	62.	Tool Sharpner	63.	Picker (M/F)
64.	Charge-room Attendant	65.	Assistant Mechanic	66.	Assistant Fitter
67.	Mechanical Helper	68.	Mail Dak Runner	69.	Attendant `C' Category
70.	Laboratory Attandant	71.	Labour Sirdhar	72.	Halwai
73.	Canteen Attendant	74.	Signal Man	75.	Dak Boy
76.	Ward Boy	77.	Laboratory Boy	78.	Peon, only in Bauxite Mines
79.	Senior Sweeper	80.	Security Guard	81.	Shearer
82.	Wast Cutter	83.	Gun-Man	84.	Explosive Carriers
85.	Guage Workers	86.	Dise Workers	87.	Sorter
88.	Mica Cutter Grade-II	89.	Chisleman	90.	Fire Clay Press or drying and refining except overburden requiring earth cutting
91.	Labour Dafadar	92.	Mines Dafadar	93.	Manual Chelly Breaker
94.	Manual Blast/ Metal Breaker.				

and any other categories of workers by whatever name called which are Semi-skilled.

SKILLED WORKERS

1.	Airwinch Haulage operator	2.	Auto-electrician	3.	Painter
4.	Blackesmith	5.	Tailor	6.	Compressor Operator
7.	Blaster/Shot-firer	8.	Driver	9.	Head cook
10.	Chargeman	11.	Carpenter	12.	Concrete Mixer Operator
13.	Compressor Attendant	14.	Air Compressor Attendant	15.	Tractor Driver
16.	Vehicle Driver	17.	Chemist and Assistant\ Chemist	18.	Sub-overseer (unqualified)
19.	Driller	20.	Handhole Driller	21.	Drill Mechanic
22.	Driver Auto	23.	Electrician	24.	Wireless Operator Asstt. Foreman
25.	Foreman	26.	Fitter	27.	Ferry Driver
28.	Issuar Loco	29.	Super Foreman	30.	Hoist Operator
31.	Imce Driver	32.	Driver	33.	Loco Driver
34.	Loader Operator	35.	Linesman	36.	Mechanic/ Machinist
37.	Mason	38.	Mid Wife	39.	Tinsmith
40.	Supervisory Mechanic	41.	Pump Attendant only in Gypsum, Barytes and Rock Phosphates	42.	Pump Operator/Driver
43.	Mining Mate with competency certificate under Metalliferous Mines Regulations, 1961.	44.	Mistry	45.	Skilled Mazdoor
46.	Turner	47.	Senior Mechanic	48.	Pipe Fitter
49.	Supervisor	50.	Drafts Man	51.	Wireman
52.	Timber Man/ Timber Mistry Elect.	53.	Stone Crusher Operator	54.	Crusher Operator
55.	Moulder	56.	Welder	57.	Operator
58.	Work Mistry	59.	Engine Driver	60.	Mining Engine Driver Grade-II
61.	Engineman	62.	Valveman	63.	Cutter
64.	Winding Engine Driver GradeII	65.	Incharge of Watch and Ward	66.	Shovel Operator
67.	Limco Loader Operator	68.	Surface Supervisor	69.	Dozer Operator
70.	Compressor Driller	71.	Dumper Tractor Operator	72.	Boiler Man (with Certificate)
73.	Machinery Attendant	74.	Air-conditions Mechanic	75.	Crech Attendant only in Magnesite, Manganese and Mica Mines
76.	Power Shovel Operator	77.	Power and Pump House Operator	78.	Miner GradeI
79.	Tractor Operator	80.	Tub Repairer	81.	Lathe Mistry
82.	Stationery Engine Attendant	83.	Generator Operator	84.	Loading Foreman
85.	Diesel Mechanic	86.	Ferro Printer cum-chairman	87.	Haulage Operator
88.	Dispensary Attendant	89.	Work Sakar	90.	Mica Cutter Grade-I
91.	Dresser Grade-I Mica	92.	Supervisory Fireman	93.	Fireman only in Mines
94.	Compressor Driver	95.	Pump Man Driver	96.	Grinder in Mica Mines
97.	Sirdhar Lathe Man	98.	Muccatam(with compentency certificate under Metalliferous Mines Regulations,1961).	99.	Geologist
100.	Security Guard (Armed)				

and any other categories of workers by whatever name they are called which are Skilled.

CLERICAL WORKERS

1.	Store clerk	2.	Tally Clerk	3.	Store Issuer
4.	Tool Keeper	5.	Computer	6.	Record Keeper
7.	Tracer	8.	File Clerk	9.	Register Keeper
10.	Time Keeper	11.	Clerk	12.	Munshi
13.	Store Attendant	14.	Teller Clerk	15.	Typist
16.	Magazine Clerk	17.	Telex/Telephone Operator	18.	Hindi Translator
19.	Assistant	20.	Librarian	21.	Assistant Magazine Clerk
22.	Store Keeper				

and any other categories of workers by whatever name they are called which are Clerical.

HIGHLY SKILLED WORKERS

1.	Compounder	2.	Overseer	3.	Surveyor
4.	Winding Engine Driver	5.	Operator (Heavy Earth Moving Shovel and Bulldozer	6.	Head Mistry
7.	Staff Nurse with Diploma	8.	Drill Operator other than Jack Hammer	9.	Electrical Supervisor with Competency Certificate
10.	Underground Shift Boss	11.	Head Mechanic	12.	Qualified/Experienced Welder
13.	Machine Tool Mechanic	14.	Mechanical/Plant Foreman	15.	Mining Supervisor
16.	Vocational Training Instructor/ Teacher	17.	Head Electrician	18.	Accountant
19.	Steno with 7 years of service	20.	Store Incharge	21.	Shift Incharge
22.	Supervisor				

and any other categories of workers by whatever name they are called which are highly skilled.

Explanation :- For the purpose of this notification :-

1. The minimum rates of wages shall consist of all inclusive rates and includes also the basic rates, the cost of living allowance say special allowance and the cash value of the concessional supply, if any, of essential commodities.

2. The minimum rates of wages are applicable to employees engaged by contractors also.

3. The minimum rates of wages for disabled persons shall be the same as payable to the workers of the appropriate category.

4. (a) "Unskilled work" means work which involves simple operations requiring little or no skill or experience on the job.

(b) "Semi-skilled work" means work which involves some degree of skill or competence acquired through experience on the job which is capable of being performed under the supervision or guidance of a skilled employee and includes supervisory work ;

(c) "Skilled work" means work which involves skill or competence acquired through experience on the job or through training as an apprentice in a technical or vocational institute and the performance of which calls for initiative and judgement;

(d) "Miner" means a worker who is directly involved/ engaged in excavation/extraction by way of digging, picking, sorting, creasing, processing and loading and other incidental works thereto in a mine.

(e) "Highly Skilled work" means work which calls for a high degree of perfection and full competence in the performance of certain task acquired through intensive technical or professional training or practical work experience for long years and also requires of a worker to assume full responsibility for his Judgement or decision involves in the execution of these tasks.

5. Where the existing rates of wages of any employee, based on contract or agreement or otherwise are higher than the rates notified, the higher rates shall be protected and treated as the minimum rates of wages for purpose of the notification.

6. Where in any area the minimum rates of wages fixed as per this notification in relation to stone mines are lower than the minimum rates of wages fixed by the State Government for the employees employed in the employment of stone-breaking or stone crushing operations carried on in any mine or

quarry or under some other arrangement, the higher rate of wages shall be payable to the workers employed in the employment in the stone mines and that wage shall be considered to be the minimum rates of wages fixed under this notification.

7. Men and Women employees shall get the same rates of wages for the same work or works of a similar nature.

8. A person working or employed in or in connection with a mine is said to be working or employed "below ground" if he is working or employed :-

(i) in a shaft which has been or in the course of being sunk; or

(ii) in any excavation which extends below superjacent ground; or

(iii) in an open cast working in which the depth of the excavation measured from its highest to its lowest point exceeds six metres.

[F.No.S-32017/2/05-WC(MW)]

ASHOK SAHU, Economic Adviser

ಕರ್ನಾಟಕ ರಾಜ್ಯಪಾಲರ ಆದೇಶಾನುಸಾರ ಮತ್ತು ಅವರ ಹೆಸರಿನಲ್ಲಿ,

ರಿಚಾರ್ಡ್ ಲೋಬೋ

ಪಿ.ಆರ್. 56

ಸಹಾಯಕ ಪ್ರಾರೂಪಕಾರ ಮತ್ತು ಪದನಿಮಿತ್ತ

ಸರ್ಕಾರದ ಉಪ ಕಾರ್ಯದರ್ಶಿ,

ಸಂಸದೀಯ ವ್ಯವಹಾರಗಳು ಮತ್ತು ಶಾಸನ ರಚನೆ ಇಲಾಖೆ.

ಅಧಿಸೂಚನೆ

ಸಂಖ್ಯೆ: ಸಂವ್ಯಶಾಇ 58 ಕೇನಿಪ್ರ 2006, ಬೆಂಗಳೂರು, ದಿನಾಂಕ: 23ನೇ ಜೂನ್ 2006

2006ನೇ ಸಾಲಿನ ಮಾರ್ಚ್ 24ನೇ ದಿನಾಂಕದ ಭಾರತ ಸರ್ಕಾರದ ಗೆಜೆಟ್‌ನ ವಿಶೇಷ ಸಂಚಿಕೆಯ ಭಾಗ–II ಸೆಕ್ಷನ್ 3(ii) ರಲ್ಲಿ ಪ್ರಕಟವಾದ ಈ ಕೆಳಕಂಡ S.O.391(E) [Order No.9-(23)/2005-Org.Fing] ದಿನಾಂಕ: 24.3.2006 ಅನ್ನು ಸಾರ್ವಜನಿಕರ ಮಾಹಿತಿಗಾಗಿ ಕರ್ನಾಟಕ ರಾಜ್ಯ ಪತ್ರದಲ್ಲಿ ಮರು ಪ್ರಕಟಿಸಲಾಗಿದೆ.

MINISTRY OF AGRICULTURE

(Department of Agriculture and Cooperation)

ORDER

New Delhi, the 24th March, 2006

S.O.391(E).- In exercise of the powers conferred by section 3 of the Essential Commodities Act, 1955 (10 of 1995), the Central Government hereby makes the following Order further to amend the Fertilizer (Control) Order, 1985, namely:-

1 (1). This Order may be called the Fertilizer (Control) Amendment Order, 2006

(2) It shall come into force on the date of its publication in the Official Gazette.

2. In the Fertilizer (Control) Order, 1985 (herein after referred to as the said Order)in clause 2-

(A) after-sub-clause (a), the following sub-clause shall be inserted, namely:-

``(aa) Biofertilizer means the product containing carrier based (solid or liquid) living microorganisms which are agriculturally useful in terms of nitrogen fixation, phosphorus solublization or nutrient mobilization, to increase the productivity of the soil and /or crop;'';

(B) in sub-clause (h), for the words `` and special mixture of fertilizers'', the words ``special mixture of fertilizer, Bio-fertilizers Specified in Schedule III and Organic fertilizers specified in Schedule IV'' shall be substituted;

(C) After sub-clause (o), the following sub-clause shall be inserted, namely :-

``(oo) Organic fertilizer means substances made up of one or more unprocessed material (s) of a biological nature (plant/animal) and may include unprocessed mineral materials that have been altered through microbiological decomposition process'';

(D) in sub-clause (q) after item iii, the following shall be inserted, namely:-

(iv) in relation to a Biofertilizer included in column 1 of Part A of Schedule III, the standard set out in the corresponding entry in column 2, subject to the limits of permissible variation as specified in part B of that Schedule;'';

(v) in relation to a Organic Fertilizer included in column 1 of part A of Schedule IV, the standard set out in the corresponding entry in column 2, subject to the limits of pemissible variation as specified in Part B of that Schedule.''

3. In the said Order, for chapter heading `` V MANUFACTURE OF MIXTURE OF FERTILIZERS", the chapter heading ``V. MANUFACTURE OF MIXTURE OF FERTILIZERS, ORGANIC FERTILIZERS AND BIO-FERTILIZERS" shall be substituted.

4. In clause 12 of the said Order, for the words" or special mixture of fertilizer", the words ``special mixture of fertilizer, Bio-fertilizer or Organic fertilizer" shall be substituted.

5. In clause 13 of the said Order, for sub-clause (1), the following shall be substituted, namely:-

``(1) Subject to the other provisions of this Order:-

(a) no person shall manufacture any mixture of fertilizers whether of solid or liquid fertilizers specified in Part A of Schedule-I of the Order unless such mixture conforms to the standards set out in the notification to be issued by the state Government in the Official Gazette;

(b) no person shall manufacture any Biofertilizer unless such Bio-fertilizer conforms to the standards set out in the part A of Schedule-III;

(c) no person shall manufacture any Organic fertilizer unless such orgnic fertilizer conforms to the standards set out in the part A of Schedule-IV."

6. In clause 14 after sub-clause (2), the following sub-clause shall be inserted, namely:-/

``(3) Every person desiring to obtain a Certificate of Manufacture for preparation of Organic fertilizer of Bio-fertilizer shall make an application in From D, in duplicate, together with a fee prescribed therefor under clause 36, ro Registering authority".

7. In clause 15 of the said Order.-

(i) for the heading the following shall be substituted, namely :-

``Grant or refusal of Certificate of manufacture for preparation of mixture of fertilizers, Bio-fertilizers or Organic fertilizers" shall be substituted;

(ii) in sub-clause (1),after the words ``mixture of fertilizer the words ``Biofertilizer, Organic fertilizer" shall be inserted;

(iii) in sub-clause (2), after the words ``mixture of fertilizer" the words, ``Bio fertilizer Organic fetilizers" shall be inserted.

8. In clause 17 of the said Order,-

(i) in the heading, after the words ``mixture of fertilizer" the words ``Bio-fertilizer or Organic fertilizers" shall be inserted,-

(ii) after the words ``mixture of fertilizers" the words ``,Bio-fertilizer or Organic fertilizers"shall be inserted.

9. In clause 18 of the said Order,-

(i) in the heading, after the words "preparation of mixture of fertilizers", the words, ``,Bio-fertilizers or Organic fertilizer" shall be inserted;

(ii) in sub-clause (1),after the words "mixture of fertilizer" the words ``Biofertilizer or Organic fertilizer" shall be inserted.

10. In clause 21 of the said Order.-

(1) for the word ``fertilizers", the words "fertilizers, Bio-fertilizers or Organic fertilizers" shall be inserted;

(ii) after sub-paragraph (a), the following shall be inserted, namely:-

"(aa) Every container in whch any Bio-fertilizer or Organic fertilizer is packed shall conspicuously be superscribed with the words BIO-FERTILIZERS/ORGANIC FERTILIZERS and shall bear only such particulars and unless otherwise required under any law nothing else, as may from time to time, be specified by the Controller in this behalf".

11. After clause 27 A of the said Order, the following clause shall be inserted, namely:-

``27 B Qualifications for appointment of Inspectors for Biofertilizer and Organic Fertilizer no person shall be eligible for appointment as inspector of Bio-fertilizer and Organic Fertilizer under this Order unless he may possess the following qualifications, namely:-

(1) Graduate in agriculture or science with chemistry. microbiology as one of the subjects; and

(2) training or experience in the field of quality control of Bio fertilizers/ Organic fertilizers.

12. In clause 28 of the said Order, in sub-clause 1, after entry (b) the following entries shall be inserted, namely :-

``(ba) draw samples of any Bio-fertilizers in accordance with the procedure of drawal of samples laid down in Schedule II";

``(bb) draw samples of any Organic fertilizers in accordance with procedure of drawal of samples laid down in Schedule IV."

13. In clause 29 of the said Order, after sub-clause (1), the following sub-clauses shall be inserted, namely,-

``(1A) Bio-fertilizer samples drawn by an inspector shall be analysed in accordance with the instructions laid sown in Schedule III in the National Center for Organic Farming, Ghazi bad or Regional Centers of Organic Farming at Bangalore, bhubaneswar, Hissar, Imphal, Jabalpur and Nagpur or any other laboratory notified by Central or State Government.;

(1B) Organic fertilizers samples drawn by an inspector shall be analyzed in accordance with the instructions laid down in Scehdule IV in the National Center for Organic Farming, Ghaziabad or Regional Centers of Oganic Farming at Bangalore, Bhuvaneswar, Hissar, Imphal, Jabalpur and Nagpur or any other laboratory notified by Central or State Government."

14. In clause 30 of the said Order,-

(a) in sub-clause (1), after the word and letter ``From K", the following shall be inserted, namely, ``and in case of Organic fertilizers and Bio-fertilizers in form K-1";

(b) in sub-clause (2), after the word and letter ``Form L" the following shall be inserted, namely.-

``and in case of Organic fertilizers and Bio-fertilizer in Form L1".

15. In the said Order, after Schedule II, the following Schedules shall be inserted namely,

``Schedule III

[see clause 2(h) and (q)]

PART-A

SPECIFICATION OF BIOFERTILISERS

1. Rhizobium

(i)	Base	=	Carrier based* or liquid based
(ii)	Viable cell count	=	CFU minimum 10^7 cell/g of carrier material of 10^7 cell/ml of liquid material.
(iii)	Contamination level	=	No contamination at 10^5 dilution
(iv)	PH	=	6.5 - 7.5
(v)	Particle size in case of carrier based material	=	All material shall pass through 0.15-0.212 mm IS Sieve
(vi)	Moisture percent by weight, maximum incase of carrier based	=	30-40%
(vii)	Efficiency Character	=	Should show effective nodulation on all the species listed on the packet.

*Type of Carrier:

The carrier material such as peat, lignite, peat soil, humus, wood charcoal or similar material favoring growth of the organism.

2. Azotobacter

(i)	Base	=	Carrier based* or liquid based
(ii)	Viable cell count	=	CFU minimum 10^7 cell/g of carrier material of 10^7 cell/m1 of liquid material.
(iii)	Contamination level	=	No contamination at 10^5 dilution
(iv)	PH	=	6.5 - 7.5
(v)	Particle size in case of carrier based material	=	All material shall pass through 0.15-0.212 mm IS Sieve
(vi)	Moisture precent by weight, maximum	=	30-40%
(vii)	Efficiency Character	=	The strain should be capable of fixing at least 10 mg of nitrogen per g of sucrose consumed

* Type of Carrier:

The carrier material such as peat, lignite, peat soil, humus, wood charcoal or similar material favoring growth of the organism.

3. Azospirillum

(i)	Base	=	Carrer based* or liquid based
(ii)	Viable cell count	=	CFU minimum 10^7 cell/g of carrier material or 10^7 cell/ml of liquid material.
(iii)	Contamination level	=	No contamination at 10^5 dilution
(iv)	pH	=	6.5 - 7.5
(v)	Particle size in case fo carrier based material	=	All material shall pass through 0.15-0212 mm IS Sieve
(vi)	Moisture percent by weight, maximum in case of carried based	=	30-40%
(vii)	Efficiency Character	=	Formation of white pellicle in semisolid Nitrogen free bromothymol blue media.

* Type of Carrier:

The carrier material such as peat, soil, humus, wood charcoal or similar material favoring growth of the organism.

4.Phsophate Solubilising Bacteria

(i)	Base	=	Carrier based* or liquid based
(ii)	Viable cell count	=	CFU minimum 10^7 cell/g of carrier material or 10^7 cell/ml of liquid material.
(iii)	Contamination level	=	No contamination at 10^5 dilution
(iv)	pH	=	6.5 - 7.5
(v)	Particle size in case fo carrier based material	=	All material shall pass through 0.15-0212 mm IS Sieve
(vi)	Moisture precent by weight, maximum in case of carried based	=	30-40%
(vii)	Efficiency Character	=	The strain should have phosphate solubilizing capacity in the range of minimum 30%, when tested spectrophotometrically. In terms of zone formation, minimum 5 mm solubilization zone in prescribed media having at least 3 mm thickness

* Type of Carrier:

The carrier material such as peat, lignite, peat soil, humus, wood charcoal or similar material favoring growth of the organism.

Part - B

TOLERANCE LIMIT OF BIOFERTILISER

5X 10^5 CFU/g carrier or per ml of liquid material.

Part - C

PREOCEDURE FOR DRAWL OF SAMPLE OF BIO-FERTILISER

PROCEDURE FOR SAMPLING OF BIO-FERTILISERS

1. General Requirments

1.0. In drawing, preparing and handling the samples, the following precautions and directions shall be observed.

1.1. Sampling shall be carried out by a trained and experienced person as it is essential that the sample should be representative of the lot to be examined.

1.2. Since the samples are also required for micro-biological analysis, utmost care is necessary to aviod extraneous contamination while drawing and handling the samples and to preserve them in their original coditions till they are ready for examination in the laboratory.

1.2.1 No preservatives or bactericidal/ fungicidal agent shall be added to samples required for microbiological analysis.

1.3. Samples in their original un opened packets should be drawn and sent to the laboratory to prevent possible contamination of the samples during handling and help in revealing the true condition of the material.

1.4. Intact packets shall be drawn from a protected place not exposed to dampness, air light, dust or soot and transferred to clean containers.

2. Sampling Equipment

2.1. A suitable scoop made of stainless steel may be used for drawing samples.

2.2. The sampling equipment shall be perfectly clean and sterile. It shall be properly sterilized by heating in a hot air oven at 160^0 C for not less than 2 h or by autoclaving for not less than 20 min at 120^0 C and held in suitable containers to prevent re-contamination.

3. Seale of sampling

3.1. Lot

All units (containers in a single consignment of type of material belonging to the same bach of manufacture) shall cnstitute a lot. If a consignment consists of different batches of the manufacture the containers of the same batch shall be separated and shall constitute a separate lot.

3.2. Batch

An inoculant prepared from a batch fermentor or a group of flasks (containers) constitute a batch.

3.3. For ascertaining conformity of the material to the requirements of the specification, samples shall be tested from each lot separately.

3.4. The number of packets to be selected from a lot shall depend on the size of the lot and these packets shall be selected at random and in order to ensure the randomness of selection.

4. Drawal of samples:

4.1. Three samples should be drawn separately from each lot.

Part - D

METHODS OF ANALYSIS OF BIOFERTILISER

1.A. METHOD OF ANALYSIS OF RHIZOBIUM BIO- FERTILISERS

1. APPARATUS

1.1 Pipettes Graduated 1,ml and 10ml

1.2. Dilution Bottles of Flasks

1.3. Petri Dishes Clear, Uniform, flat - bottomed.

1.4. Hot - Air Oven

Capable of giving uniform and adequate temperature, equipped with a thermometer calibrated to read up to 250^0 C and with vents suitably located to assure prompt and uniform heating.

1.5. Autoclave

1.6. Incubator

1.7. Hand Tally or Mechanical counting Device

1.8. pH meter

2. REAGENTS

2.1. Congo Red - one percent aqueous solution

2.2. Medium

Use a plating medium of the following composition :

Agar	20 g
Yeast Extract	1 g
Mannitol	10 g
Potassium hydrogen phosphate (k_2HPO_4)	0.5. g
Magnesium sulphate ($MgSO_4$ $7H_2O$)	0.2. g
Sodium Chloride (NaCl)	0.1. g
Congo red	2.5. ml
Distilled water	1000 ml
pH	7.0

2.3. Sterilizing and preparation procedure for plates :

2.3.1. Sterilize the sampling and plating equipment with dry heat in a hot air over at not less than 160^0 C for not less than 2 hours.

2.3.2. Sterilize the media by autoclaving at 120^0 C for 20 min. To permit passage of steam into and from closed containers when autoclaved keep stoppers slightly loosened or plugged with cotton. Air from with in the chamber of the sterilizer should be ejected allowing steam pressure to rise.

Preparation of Plating Medium And Pouring

2.3.3. Prepare growth medium in accordance with the composition of the specific biofertiliser

2.3.4. Melt the required amount of medium in boiling water or by exposure to flowing steam in partially closed container but avoid prolonged exposure to unnccessarily high temperature during and after melting. Melt enough medium which will be used with in 3 h. Re-sterlisation of the medium may cause partial precipitation of ingredients.

2.3.5. When holding time is less than 30 min, promptly cool the molten medium to about 45^0 C, and store until used, in a water bath or incubator at 43 to 45^0 C. Introduce 12 to 15 ml of liquefied medium or appropriate quantity depending on size of the petridish at 42 to 44^0 C into each plate. Gently lift the cover of the dish just enough to pour in the medium, Sterlise the lips of the medium containers by exposure to flame.

a. immediately before pouring.

b. Periodically during pouring, and

c. When pouring is complete for each batch of plates, if portions of molten medium remain in containers and are to be used without subsequent sterilization for pouring additional plates. As each plate is poured thoroughly mix the medium with test portions in the Petri dish.

2.3.6. By rotating and tilting the dish and without splashing the medium over edge, spread the medium evenly over the bottom of the plate, provide conditions so that the medium solidifies with reasonable promptness (5-10 min) before removing the plates from level surface.

3., PREPARATION OF SERIAL DILUTIONS FOR PLATE COUNTS

3.1. Dispense 30 g of Inoculant to 270 ml of sterile distilled denmeralized water and shake for 10 min on a reciprocal shaker or homogeniser, Make serial dilutions up to 10^{10} Take 0.1 ml or suitable alliquots of 10^6 to 10^9 dilutions using sterile pipettes and deliver to Petri dishes containing set medium as given in 2.1 and spread it uniformly with a spreader. Invert the plates and promptly place them in the incubator.

4. INCUBATION OF PLATES

4.1. Label the plates and incubate at 28+/-2^0 C for 3 to 5 days for fast growing Rhizobia and 5 to 10 days for slow-growing ones

4.2. Colony Counting aids

Count the colonies with the aid of magnifying lens under uniform and properly controlled, artifical illumination. Use a colony counter, equipped with a guide plate and rules in centimeter square. Record the total number of colonies with the hand tally. Avoid mistaking particles of undissolved medium or precipitated matter in plates for pin-point colonies. To distinguish colonies form dirt, specks and other foreign matter, examine doubtful objects carefully.

4.3. Count all plates but consider for the purposes of calculation plates showing more than 30 and less than 300 colonies per plate. Disregard colonies which absorb congo red and stand out as reddish colonies. Rhizobium stands out as white, translucent, glestening and elevated colonies. Count such colony numbers and calculate figures in terms of per litre, of carrier. Also check for freedom from contamination at 10^5 dilution.

5. TEST FOR NODULATION

5.1. POT CULTURE TEST

Plant Nutrient Solution

	Composition	**Concentration**	**g/l**
(a)	Potassium chloride	0.001 M	0.0745
(b)	Potassium hydrogen Phosphate (K_2HPO_4)	0.001 M	0.175
(c)	Calcium sulphate ($CaSO_4$ $2H_2O$)	0.002 M	0.344
(d)	Magnesium sulphate (MgSO4. $7H_2O$)	0.001 M	0.246
(e)	Trace elements solution:		
	(1) Copper sulphate ($CuSO_4$ $5H_2O$)	0.01 mg/kg	0.78
	(2) Zinc sulphate ($ZnSO_4$ $7H_2O$)	0.25 mg/kg	2.22
	(3) Manganese sulphate ($MnSO_4$ $4H_2O$)	0.25 mg/kg	2.03
	(4) Ammonium molybdate [$(NH_4)_6MO_7O_{24}.4H_2O$]	0.0025 mg/kg	0.01
	(5) Boric acid (H_3BO_4)	0.125 mg/kg	1.43

Prepare the solution No. (e) consisting of trace elements in one litre of stock solution and add final nutrinet solution at the rate of 05 ml per litre.

(f)	Iron solution:		g/100 ml
	(1) ferrous sulphate		5
	(2) Citric acid		5

Prepare the solution No. (f) as 100 m1 of stock solution and add final nutrient solution at the rate of 0.5 ml per litre.

PREPARATION

Prepare the nutrient solution by weighing out substances (a), (b) and (d) and dissolving them in a litre of water. To this solution add 0.5. ml of trace elements solution and 0.5. ml of iron solution. Grind in a mortar 0.344 g of calcium sulphate (c) to a fine consistency and add to the final nutrient solution. Autoclave the nutrient solution thus prepared at 120^0C for 20 min

NOTES

1. The nutrient solution may be prepared in the tap water provided the water is soft.
2. The nutrinet solution should 4e shaken well to disperse calcium sulphate before dispensing.
3. If the solution is made up with distilled water, the pH is about 7.2 before autoclaving and falls to 5.5 on autoclaving and rises slowly on standing to about 5.8. However, there is no need to adjust pH. For most tropical legumes, pH of about 6.0 is adequate.

5.3. PROCEDURE

5.3.1. Immerse the seeds in 95 percent alcohol and follow by surfave-sterilization in freshly prepared chlorine water (for 15 to 20 min) or 0.1 percent mercuric chloride solution 3 mim in a suitable container such as a screw-capped bottle or a test-tube with a rubber hung. In case of seeds with tough seed coat, concentrated sulphuric acid may be used as a surface sterilant for 20 to 30 min. It is recommended that the seeds should be placed overnight in a desiccator containing calcium chloride before surface sterilization with sulphuric acid. Pour out the sterilant and wash the seeds in several changes of sterile water and wash the seeds in several changes of sterile water (at least ten times) to get rid of the sterilant. Fill earthenware of glazed pots with soil (2 parts soil and 1 part washed coarse sand) (pH 6 to 7) and autoclave for 2 h at 120^0C. After two days incubation at room temperature, repeat autoclaving to ensure complete sterility of soil. Inoculate surface-sterilized seeds with a water slurry of the inoculant taken from a culture packet (15 to 100 g seeds per gram of inoculant depending on the size of the seed) and sow the seeds. Keep a set of pots with uninoculated seeds as control and also a set of pots. With ammonium nitrate at the rate of 100kg N/ha as control aid incubate them in a pot-culture house during appropriate seasons for appropriate plants, taking care to separate the inoculated pots from the control pots. If growth rooms or cabinets having facilities to adjust temperature and light are available, the pots may be incubated in such controlled environmental conditions. Sterilize the nutrinet solution at 120^0C for 20 min and irrigate each pot once to the moisture holding capacity of soil. Subsequently, water the seedling periodically with sterilized water preferably through a plastic tube, taking care to prevent splashing of water from inoculated pots to uninoculated ones. Maintain required number of replicated pots (4 to 6) for each botanical species for statistical analysis.

5.3.2. After two to three weeks of growth, thin down the number of plants in each pot to four uniform plants. At the end of 6 to 8 weeks, take one set pots from both the control and inoculated series and, separate the plants carefully from the soil under slow-running water. Obtain data on the number, colour (effective nodules are pink or red) and mass of nodules. At the end of 6 to 8 weeks, harvest the shoot system, day at 60^0C for 48 h and determine dry mass. For the above purpose, maintain adequate replications of pots (4 to 16).

5.3.3. Recorded the nodulation data regarding formation of pink colour of nodules as revealed visually when nodules aer cut open by a razor blade. After computing the data, based on the dry mass of plants and nodulation data decide the effectiveness of cultures. If good effective pink modulation is obtained in inoculated plants together with local absence or sometimes presence of stray nodules in controls and if there is a 50 percent increase in the dry mass of plants over the uninoculated control without nitrate, it may be concluded that the culture is of the required quality.

1. B. METHOD OF ANALYSIS OF AZOTOBACTER BIO-FERTILISER

1. APPARATUS - same as of Rhizobium

2. REAGENTS:
2.1. Medium
Use a plating medium of the following composition

Agar	20g
Sucrose ($C_{12} H_{22} O_{11}$)	20.0g
Ferric sulphate $Fe_2 (SO_4)_3$	0.1g
Dibasic potassium phosphate (K_2HPO_4)	1.0g
Magnesium sulphate ($MgSO_4$ $7H_2O$)	0.5g
Sodium Chloride (NaCl)	0.5g
Calcium carbonate ($CaCO_2$)	2.0g
Sodium Molybdate ($Na_2 MoO_4$)	0.005 gms
Distilled water	1000ml
pH	6.8. to 7.2

2.2 Steriliztion & preparation procedure for plates:
same as for Rhizobium

PREPARATION OF PLATING MEDIUM AND POURING

3. PREPARATION OF SERIAL DILUTIONS FOR PLATE COUNTS :

Dispense 30 g of Inoculant to 270 ml of sterile distilled water and shake for 10 min on a reciprocal shaker. Make serials dilutions up to 10^{10} Take 0.1 ml or suitable allquots of 10^6 to 10^9 dilutions using sterile pipettes and deliver of Petri dishes containing set medium as given in 2.1 and spread it uniformly. Invert the plates and promptly place them in the incubator.

4. Incubation of plates:- Same as Rhizobium

4.1. Lable the plates and incubate at 28+/-3^0 C for 4 to 6 days.

4.2. Colony counting aids: Same as Rhizobium

Azotobactor chrococcum colonies are gummy, raised with or without striations, viscous and often sticky. The pigmentation varies from very light brown to black Count the colony number and observe the cyst formation as given below and calculate number per gram of the carrier material.

Grow the vegetative cells at 30^0 C on Burks agar medium comprising sucrose 20 g, dipotassium hydrogen phosphate 0.64 g, dihydrogen potassium phosphate 0.20 g; sodium chloried 0.20 g; calcium sulphate 0.05 g, sodium molybdate 0.001 g; ferric sulphate 0.003 g, agar 20 g and distilled water 1.00 ml. Look for vegetative cells after 18 to 24 h either by simple staining method or through a phase contrast microscope.

Grow the cyst cells on Burks agar medium as given above with 0.3 precent n-butanol in place of the carbon source. Look for cyst formation after 4 to 5 days in cubation.

5. TEST FOR NITROGEN FIXATION IN PURE CULTURE

5.1. PURE CULTURE MEDIUM

5.1.1.Prepare medium as given for Azotobacter (2.1 under 1 B), excluding agar.

5.2. PROCEDURE

Select from each Azotobacter colony, of the type that has been counted as Azotobacter chroococcum in. One colony and plate on the mudium given in. Use this pure culture for inoculation the broth for nitrogen fixation. For this purpose, take 50-m1 aliquots of broth in 250-ml conical flasks for inoculation. After 12 days growth at 28^0C, test the contents of the flasks for purity by streaking on fresh medium and concentrating over a water-bath (50 to 60^0C) to dryness, Wash the dried culture and take it as a sample. The contents of the flasks in inoculated control series should be processed in a similar manner.

5.3. Determination by Kjeldahl Method.

(i) Reagents

(ii) Sulphuric acid - 93 - 98 percent, N-free

(iii) Digestion mixture - Mix copper sulphate and potassium sulphate in the ratio 1 : 10 and grind them to a fine powder.

(iv) Sodium hydroxide pellets or solution, N-free - For solution, dissolve about 450 g of sodium hydroxide in water, cool, and dilute to 1 litre (sp gr of the solution should be at least 1.36)

(v) Zinc granules - reagent grade

(vi) Indicators:-

a) Methyl red indicator	-	Dissolve 1 g of methyl red in 200 ml of ethanol.
b) Mixed indicator	-	Prepare mixed indicator by dissolving 0.8. of methyl red and 0.2 g of methyl blue in 500 ml of ethanol.

(vii) Hydrochloric or sulphuric acid - Standard solution 0.5 or o.1 N when amount of nitrogen is small.

(viii) Sodium hydroxide standard solution - 0.1 N (or other specified concentration).

Note - Ratio of salt to acid (m/v) should be about 1 : 1 at the end of the digestion for proper temperature control. Digestion may be incomplete at a lower ratio, and nitrogen may be lost at higher ratio. Each gram of fat consumes 10 ml of sulphuric acid and each gram of carbohydrate 4.0 ml of sulphuric acid during digestion.

5.4. Apparatus

(i) For digestion -Use Kjeldahl's flaks of hard,moderately thick, well-annealed glass with total capacity approximately 500 to 800 ml. conduct digestion over heating device adjusted to bring 250 ml of water at 25_0C to rolling boil in about 5 minutes. To test the heaters, preheat for 10 minutes in the case of gas burners and for 30 minutes in the case of electric heaters. Add 3 to 4 boiling chips to prevent superheating.

(ii) For distillation - Use 500- to 800-ml Kjeldahl's flask fitted with rubber stopper through which passes the lower end of a efficient scrubber bulb or trap to prevent mechanical carry-over of sodium hydroxide during distillation. Connect the upper end of the bulb to a condenser by a rubber tubing. Trap the outlet of the condenser in such a way as to ensure absorption of ammonia distilled over with the receiver.

(a) Procedure:-

Place 0.25 g of the sample in the digestion flask. Add 0.7 Gm mercuric oxide, 15 gm potassium sulphate followed by 25 ml of sulphuric acid. Shake, let stand for about 30 minutes and heat carefully until frothing ceases. Boil briskly until the solution clears and continue boiling further for 90 minutes. Cool,and about 200 ml of water, cool to room temperature and add a few zinc granules.

(b) Tilt the flask and carefully add 50 ml of sodium hydroxide solution without agitation. Immediately connect the flask to the distillation bulb on the condenser whose tip immersed in 50 ml of standard 0.1 N acid in the receiving flasks. Rotate the digestion flask carefully to mix the contents. Heat until 150 ml of the distillate collects and titrate excess acid with 0.1 N base using methyl red or mixed indicator. Carry out blank determination on reagents.

Note: Check the ammonia recording periodically, using inorganic nitrogen control,for example, ammonium sulphate.

(c) Calculation:-

(i) Nitrogen content, percent by mass =

(Mililiters of 0. 1N acid for sample - mililiters of 0. 1N acid for blank) x 0.14 mass of sample taken

(ii) Total nitrogen in culture = Total dry mass of sample x precent nitrogen.

(d) Take a 1.0 g of accurately weighed sample each from the inoculated series and from the controls. Put them separately in 250 m1 volumetric flask, add 150 m1 water, mix the content and make up the volume to 250 m1 water. Shake for 5 minutes and centrifuge for 15 minutes at 10000 rev/min. Estimate glucose in the supernatant in triplicate. The difference between the two provides the data of actual amount of glucose consumed. Calculate the amount of nitrogen fixed per gram of sucrose consumed.

5.5. Determination of Glucose:- From the supernatant, drawn suitable aliquots and estimate reducing sugars (glucose) as follows.

(i) Reagents

(ii) Soxh let modification of Fehling solution:- Prepare by mixing equal volumes of Solution A and Solution B immediately before using.

(iii) Copper sulphate solution (Solution A)- Dissolve 34.639 g of copper sulphate crystals ($CuSO_4$ $5H_2O$) in water, dilute to 500 ml and filter through glass wool or filter paper. Standardization of copper sulphate solution:- Using separate pipettes, pipette accurately 5 ml of Solution A and 5 ml or Solution B into a conical flask of 250 ml capacity. Heat this mixture to boiling on an asbestos gauze and add standard invert sugar solution from a burette, about 1 ml less than the expected volume which will reduce the Fehling solution completely (about 48 ml). Add 1 ml of ethylene blue indicator while keeping the solution boiling. Complete the titration within 3 minutes, the end point being indicated by change of colour form the blue to red. From the volume f invert sugar solution used, calculate the strength(s) of the copper sulphate solution by multiplying the titre value by 0.001 (mg/ml of the standard invest sugar solution). This would give the quantity of invert sugar quirked to reduce the copper in 5 ml of copper sulphate solution.

(iv) Potassium sodium tart rate (Rochelle salt) Solution (Solution B):- Dissolve 173g of potassium sodium tart rate and 50 g of sodium hydroxide in water, and dilute to 500 ml. Let the solution stand for a day, and filter.

(v) Hydrochloric acid sp- gr 1.18 at 20^0C (approximately 12 N)

(vi) Standard invert sugar solution-Weigh accurately 0:95 g of sucrose and dissolve it in 500 ml of water. Add 32 ml of concentrated hydrochloric acid, boil gently for 30 minutes and keep aside for 24 hours. Neutralize with sodium carbonate and make the final volume to 1000 ml 50 m; of this solution contains 0.05g of invert sugar.

(vii) Methylene blue indicator- 0.2 percent in water.

(viii) Procedure:- Place about 1 g (M), accurately weighed, of the prepared sample of a1 into a 250 ml volumetric flask and dilute with about 150 ml of water. Mix thoroughly the contents of the flask and make the volume of 250 ml with water Using separate pipettes, take accurately 5 ml each of Solution A and Solution B in a porcelain dish. about 12 ml of Al solution from a burette and heat to boiling over an asbestos gauze. Add 1 ml of methylene blue indicator and while keeping the solution boiling complete the titration within 3 minutes, the end point being indicated by change of colour from blue to red. Note the volume (H) in ml of Al solution required for the titration.

(ix) Calculation

$$\text{Total reducing sugars, percent by mass} = \frac{250 \times 100 \times S}{H \times M}$$

Where

S = strength of copper sulphate solution,

H = Volume in ml of Al solution required for titration, and

M = mass in g of Al taken for the test.

5.6. Determination of Sucrose

(i) Procedure:- To 100 ml of the stock Al solution ,add 1 ml of concentrated hydrochloric acid and heat the solution to near boiling. Keep aside overnight. Neutralize this solution with sodium carbonate and determine the total reducing sagas as described in

(ii) Calculation

(a) Sucrose, precent by mass= (reducing sugars after inversion, percent by mass (reducing sugars before inversion, percent by mass) x 0.95.

(b) Nitrogen, mg per gram of sucrose consumed = 2(a-b)-C

where

a = initial quantity of sucrose taken for the test,

b = mass of sucrose as calculated in (a),and

` c = amount of nitrogen fixed per gram of glucose.

1.C. METHOD OF ANALYSIS OF AZOSPIRILLUM BIO-FERTILISER

1. APPARATUS : same as Rhizobium

2. **REAGENTS**

2.1. Medium

Use a plating medium of the following composition

D-Malice acid	5.0 g
Potassium hydroxide	4.0 g
Di-potassium hydrogen phosphate	0.5 g
Ferrous sulphate	0.05 g
Magnesium sulphate	0.1 g
Sodium chloride`	0.2 g
Calcium chloride	0.1 g
Sodium molybdate	0.002 g
Distilled water	1000ml
Boromothymol blue (0.5% alcoholic solution)	2.0 ml
Agar	1.7 g
pH adjusted to 6.5. - 7.0	

2.2. Sterilizing and preparation procedure for plates:
same as Rhizobium

PREPARATION OF PLATING MEDIUM AND POURING

Same as Rhizobium

3. PREPARATION OF SERIAL DILUTIONS FOR PLATE COUNTS:

same as Rhizobium

4. INCUBATION OF PLATES:- Same as 4.1, p-26

4.1. Label the plates and incubate at $36+1^0$ C for 4 to 6 days.

4.2. Colony counting aids: Same as 4.2, p-26

COUNTING

Counting the tubes or plates which have turned blue in colour after inoculcation and ascertain the presence of pellicles in undisturbed medium. To determine usual contamination on the same examine doubtful objects carefully.

Count all plates / tubes which have turned blue and consider them for the propose of calculation . Court such type of tubes/ plates and tally count with MPN table Annex-E to get the number of cells per gram of the carrier.

Azospirillum Count/g of carrier = $\frac{\text{MPN table value x Dilution level}}{\text{Dry mass of product}}$

1. D. METHOD OF ANALYSIS OF PHOSPHATE SOLUBULISING BACTERIAL BIO-FERTILISER

1. APPARATUS: same as Rhizobium

2. REGENTS

2.1. Medium

Use a plating medium of the following composition:

Glucose	10.0 g
Tri-calcium phosphate	5.0 g
Ammonium sulphate	0.5. g
Magnesium sulphate	0.1 g
Sodium Chloride	0.2 g
Yeast extract	0.5 g
Manganese sulfate	Trace
Ferrous sulphate	Trace
Distilled water	1000 ml
Agar	15.0 g
pH adjusted to 7.+/-0.2	

2.2. Sterilizing & preparation procedure for plates:
same as Rhizobium

PREPARATION OF PLATING MEDIUM AND POURING

Same as Rhizobium

3. PREPARATION OF SERIAL DILUTIONS FOR PLATE COUNTS:

Same as Rhizobium

4. INCUBATION OF PLATES:-

4.1. Label the plates an incubate at 28+1^0 C for 4 to 6 days.

4.2. Colony counting aids: Same as Rhizobium

Counting

Count the total number of colonies on the plates including colonies with solubilsation zone with the help of a colony counter.

Methods for counting solubilisation zones

a. Take 10 g of PSBI (BF) in 90 ml in water
b. Make a ten fold dilution series up to 10^7
c. take 0.2 ml aliquot of 10^5 to 10^7 dilution using sterile pipettes and delivered to Petri dishes containing pikowskeyi media.
d. Spread it uniformly, Invert the plates and incubate them up to 2 weeks at 28 + / - 2^0 C.
e. Count the colonies showing hallow cones and measure their diameter. Minimum acceptable zone is 10 mm in diameter.

5. DETERMINATION OF SOLUBLE PHOSPHORUS USING ASCORBIC ACID

5.1 APPARATUS

Spectrophotometer capable of transmission measurements at 840 to 880 nm.

Extractant: It is olsen extract.

5.2 REAGENTS

Ammonium Molybdate $[(NH_4)_6MO_7O_{24}.4H_2O]$
L-Ascorbic Acid
p-Nitrophenol
$4NH_2SO_4$

5.3. PREPARATION OF REAGENTS

5.3.1. Sulphomolybdic Acid:-

- Take 20 g of ammonium molybdate and dissolve in 300 ml of distilled water.
- Add slowly 450 ml of 10N H_2SO_4.

- Cool the above mixture and add 100 ml of 0.5 percent solution of antimony potassium tart rate.
- Cool and make the volume to one liter. Store in glass bottle away form direct sunlight.

5.3.2. **Preparation of Mixed reagent**

Add 1.5. g of L-ascorbic acid in 100 ml of the above stock solution and mix. Add 5 ml; of this solution to develop colour. Mixed reagent is to be prepared fresh as it does not keep for more than 24 h.

5.3.3. **procedure**

(i) Weight the required material in a 100 ml conical flask.

(ii) Add 50 ml of extract and shake it for 30 min. on a rotary shaker.

(iii) Filter the suspension through What man filter paper No. 40. If the filtrate so colored then add a tea spoon of Dacro-60 (activated phosphorus free carbon), reshake and filter.

(iv) Take a known aliquot (5 to 25 ml) of the extract in a 50 ml volumetric flask.

(v) Add 5 drops of p-mitrophenol indicator (1.5 precent solution in water)and adjust the pH of the extract between 2 and 3 with the help of $4NH_2SO_4$. The yellow colour will disappear when the pH of the solution becomes 3. Swirl gently to avoid loss of the solution along with the evolution of CO_4.

(vi) When the CO_2 evolution has subsided, wash down the neck of the flask and dilute the solution to about 40 ml.

(vii) Add 5 ml of the sulphomolybdic acid mixed reagent containing ascorbic acid, swirl the content make up the volume.

(viii) Measure the transmission after 30 min at 880 nm using red filter. The blue colour developed remains stable up to 60 minutes.

(ix) Record the concentration of Phosphorus (P) in the extract from the standard curve and calculate the concentration of soluble Phosphorus as follows:

5.3.4. CALCULATIONS

(a)	Weight of the substance taken	=	xg.
(b)	Volume of the extract tent added	=	50 ml
(c)	Volume of the extract taken for P determination	=	y ml
(d)	Volume made after colour developed	=	50 ml
(e)	Reading from the standard curve against precent transmission recorded	=	z ppm

(f) Soluble Phosphorus, present P = $\frac{zx\ 50 \times 10^6 \times 50\ X100}{y.x}$

5.3.5. Preparation of Standard Curve

Prepare standard curve using 0.1 to 0.6 ppm P in 50 ml volumetric flask. Plot the standard curve by taking concentration of soluble P on w-axis and precent T on y-axis using a semi-log graph paper. It is a straight line relationship between the soluble P awnd precent T when plotted an a semi-log graph paper.

6. MAINTENANCE AND PREPARATION OF CULTURE AND QUALITY CONTROL AT BROTH STAGE

RHIZOBIUM:

1. Maintenance of pure cultures

1.1. Maintain pure cultures of Rhizobia on yeast extract mannitol agar (YEMA) slants of the following composition.

Mannitol	10.0 g
Potassium hydrogen phosphate (K_2HPO_4)	0.5 g
Magnesium sulphate ($MgSO_4$ $7H_2O$) 0.2 g	
Sodium chloride (NaC1)	0.1 g
Calcium carbonate (Ca CO_3)	1.0 g
Yeast extract	1. 0 g
Agar	18.0 g
Distilled water	1 Litre
pH	6-8- 7.0

1.2. Transfer a loopful of the pure culture to each of the agar slants aseptically in an inoeulation room and incubate at $28+/-2^0$ C for. 3 to 10 days depending upon the species of Rhizobium. Always keep pure cultures at 4^0 C.

2. Preparation of Inocumm Cultures

2.1. Prepare yeast mannitol both composition as given in 1.1. minus agar.

2.2. Transfer a loopfull of the culture.

3. Quality Control Test Recommended at Broth Stage:

3.1. Qualitative Tests

3.1.1. Check for freedom from visible contaminants

3.1.2. The pH of the bacterial broth shall normally be between 6.5 and 7.5

3.1.3. Smear and Gram stain

3.1.3.1. Reagents

a). Ammonium oxalate crystal violet stain weigh 0.2 g of crystal violet and dissolve in 20 ml of 95 percent ethyl alcohol. Dissolve separately 0.8 g of ammonium oxalate in 80 ml of distilled water. Mix the two solutions and filter through a filter paper.

b). Iodine solution

Iodine	1.00 g
Potassium Iodide	2.00 g
Distilled water	300 ml

Weigh the ingredients and dissolve in water. Filter through a filter paper.

c) Erythosine

Erythrosine	1.00 g
Phenol	5.00 g
Distilled water	100 ml

Weigh the ingredients, dissolve in distilled in water and through a filter paper.

3.1.3.2. Procedure

Prepare a smear on a clean microscope slide, fix over a flame by gentle and intermittent healing, air cool and flood with ammonium oxalate crystal violet stain for 1 min. After removing the excess of ammonium oxalate crystal violet, wash the slide under a gentle stream of running tap water. Flood the slide with iodine solution for half a minute remove excess stain wash with 95 percent ethyl alcohol and finally wash under a gentle stream of running tap water. Flood the slide with erythrosine stain for about 3 min, wash under a gentle stream of running tap water and dry between the folds of a filter paper, Examine the slide under a compound microscope using an oil immersion objective.

Note:- A smear prepared from undiluted broth should be free from Gram positive cells. The presence of a few gram positive cells in occasional fields which may be due to dead cells in the medium may be disregarded.

3.1.4. Absence of Growth on Glucose-Peptone Agar

The composition of the glucose-peptone agar is as follows:

Glucose	10.0 g
Peptone	20.0 g
Sodium chloride (NaCl)	5.0
Agar (Is6850)	15.0
Distilled water	1000 ml
Bromocresol purple	10 ml of 1.6. persons ethyl alcohol solution
pH	7.2

Note:- When a loopful of the broth is streaked into this medium and incubated at 28 +/- 2^0 C for 24h the purple - violet colour of the medium (due to the indicator bromocresol purple) shall not change. If the colour changes to yellow (acidic reaction) or blue (alkaline reaction, the broth is grossly contaminated. Hence, the broth should be rejected.

3.1.5. Streak on yeast Extract mannitol Agar with Congo Red

When a loopful of broth culture is streaked to a plate of this medium and incubated at 28 +/- 2^0 C for 3 to 10 days, it shall show colonies of bacteria with growth characteristics same as that of the pure culture used in the preparation of the broth, Other wise, the broth should be rejected.

3.2. Quantitative Test

3.2.1. Viable or Plate counts

Serially dilute one military of the broth to obtain dilutions of the order of 10^6 to 10^9 Plate 0.2 ml aliquots of the dilutions on YEMA plates and incubate at 28 +/-2^0 C for 2 to 6 days, depending on the species of Rhizobium. The counts of viable Rhizobium in the final broth from shake culture or fermentors shall be not less than 10^8 to 10^9 cells / ml. Other wise, the broth should be rejected.

AZOSPIRILLUM

1. Maintenance of pure cultures

1.1. Maintain pure culture of Azospirillum on nitrogen free bromothymol blue medium and maintain as semi solid medium

1.2. Transfer a loopful of pure culture to each of the agar culture tube aseptically in an inoculation room and incubate 37+ - 2^0C for three days and keep at undisturbed Always keep pure culture below 5^0 C

2. Preparation of Inoculum culture and Mass culture :

Inoculum culture and mass culture of this standard shall be prepared as described for Rhizobium of this standard.

3. Quality Control Test Recommended at Broth Stage

3.1. Qualitative Test

3.1.1. Check for free contaminants by preparing slide and observing under microscope.

3.1.2. The pH of bacterial broth shall normally be between 7.0 to 8.0.

3.1.3. Gram staining test shall be carried out as described for Rhizobium of this standard.

3.1.4. See the colour change in the media after 24 hours from inoculation. The coolour will change from green to blue.

3.1.5. Watch the pellicle just below the surface of the media. It is checked on the third day after keeping inoculated broth undisturbed.

3.2. Quantitative Test

3.2.1. Most probable Number (MPN) as given in Annexure-3. The counts of Azosprillium in the final broth from shake culture or fermentoes shall be not less than 10^9 to 10^9 cells/ml. Other wisem the broth should be rejected.

AZOTOBACTOR

1. Maintenance of pure cultures.

1. 1. Maintain pure cultures of Aztobactor slants of the following composition

Agar	20 gm
Sucrose	20 gm
Ferrous Sulphate	0.1
Dibasic Potassium Phosphate	1.0 gm
Magnesium Sulphate	0.5. gm
Clacium carbonate	2.0 gm
Sodium Molybdate	0.005 gm

1.2. Transfer a loopful the pure culture to each of agar slantas aseptically in an inoculator room and incubate at 28 + - 2^0 C for 3 to 10 days depending upon the species of Azotabactor. Always keep culture pure cultures at 5^0 C

2. Preparation of inoculum culture

2.1 Prepare Jensens media broth of the compositor as given in 1.1. minus the agar

2.2. Transfer a loop full of the culture into a 100ml/ 250 m; conical flask containing the broth. Incubate the flasks at 28 + /- 2^0C on a rotary shaker for 2 to 6 days

3. Quality control Tests recommended by Broth stage.

3.1 Qualitative test

3.1.1 Check for free from containments by preparing slide and observing under microscope.

3.1.2. The pH bacterial broth shall normally be between 6.5 to 7.0

3.1.3 Gram staining test shall be carried out as described for Rhizobium of this standard.

3.2. Quantitative test

3.2.1. Viable cell count same as Rhizobium

4. Packing, Marking, Storage and use

4.1 PACKING

Biofertiliser shall be packed in polyethylene packs, thickness which shall not be less than 75-100 micron.

4.2 MARKING

Each polyethylene pack shall be marked legibly and indelibly with the following information:

(a) Name of the product,
(b) Name and address of the manufacturer,
(c) Crop(s) for which intended;
(d) Type of the carrier used;
(e) Batch number;
(f) Date of manufacture;
(g) Expiry date which shall not be more than 6 months from the date of manufacture;
(h) Net mass in kg/ gram and area meant for;
(i) Storage instruction worded as under;

``STORE IN COOL PLACE AWAY FROM DIRECT SUN LIGHT AND HEAT"

(I) Any other information required under the standards of Weights and Measures (Packaged Commodities) Rule. 1977.

4.3. Items (c), (f) and (g) shall be printed on a coloured ink background.

4.4. Direction for use of biofertiliser shall be printed briefly on the packets ad given below.

``The contents of the packet are sufficient enough for seed treatment on to the given area to be broadcasted or given seedlings for root dipping depending on the specified crops as denoted on the packet. Mix inoculants with seeds gently with the minimum amount of water taking care to avoid damage to seed coat. Dry the inoculated seed under shade over clean surface gunny bag and sow them immediately.

Use only for the crops mentioned. Use before the expiry date and do not expose to direct sun light or heat.

Biofertiliser is not a chemical fertilizer hence do not mix inoculated seeds or inoculant with agro-chemicals.

4.5. Storage

Inoculant shall be stored by the manufacturer in a cool and dry place away from direct heat preferably at temperature of 2^0C. It shall also be the duty of the manufacture to instruct the retailers and, in turn, the users about the precautions to be taken during storage.

Schedule - IV

[see clause 2(h) and (q)]

Part - A

SPECIFICATION OF ORGANIC FERTILISER

1. City compost:

(i)	Moisture, per cent by weight	15.s-25.0
(ii)	Colour	Dark brown to black
(iii)	Odour	absences of foul odour
(iv)	Patricle size	Minimum 90% material should pass through 4.0 mm S Sieve
(v)	Bulk Density (g/cm^3)	0.7 -0.9
(vi)	Total Organic Carbon,	16.0
	Per cent by weight, Minimum	
(vii)	Total Nitrogen (as N)	0.5
	Per cent by weight, Minimum	
(viii)	Total Phosphates (as P_2O5)	0.5
	Per cent by weight, Minimum	
(ix)	Total Potash (as K_2O)	1.0
	Per cent by weight, Minimum	
(x)	C:N ratio	20 : 1 or less
(xi)	pH	6.5.- 7.5
(xii)	Conductivity (as dam^{-1}),	
	Not more than	4.0
(xiii)	Pathogens	Nil
(Xiv)	Heavy metal content, (as mg/ Kg)	
	Per cent by weight, Maximum	
	Arsenic (as As_2O_3)	10.00
	Cadmium (as Cd)	5.00
	Chromium (as Cr)	50.00
	Copper (as Cu)	300.00
	Mercury (as Hg)	0.15
	Nickel (as Ni)	50.00
	Lead (as Pb)	100.00
	Zinc (as Zn)	1000.00

2. Vermicompost :

(i)	Moisture, per cent by weight	15.0-25.0
(ii)	Colour	Dark brown to black
(iii)	Odour	Absence of foul odour

(iv)	Particle size	Minimum 90% material should pass through 4.0 mm IS Sieve
(v)	Bulk Density (g/cm^3)	0.7 0.9
(vi)	Total Organic carbon	18.0
	Per cent by weight, Minimum	
(vii)	Total Nitrogen (as N)	1.0
	Per cent by weight, Minimum	
(viii)	Total Phosphate (as P_2O5)	1.0
	Per cent by weight, Minimum	
(ix)	Total Potassium (as K_2O)	1.0
	Per cent by weight, Minimum	
(x)	Heavy metal content, (as mg/kg)	
	Per cent by weight, Minimum	
	Arsenic (as As_2O_3)	10.00
	Cadmium (as Cd)	5.00
	Chromium (as Cr)	50.00
	Mercury (as Hg)	0.15
	Nickel (as Ni)	50.00
	Lead (as Pb)	100.00

3. Pressmud :

(i)	Moisture, per cent by weight, maximum	15.0
(ii)	Total Nitrogen (as N)	1.80
	Per cent by weight, Minimum	
(iii)	Total Phosphorous (as P_2O_5)	2.00
	Per cent by weight, Minimum	
(iv)	C:N ratio, Minimum	10.:1
(v)	Total Potassium (as K_2O)	1.40
	Per cent by weight, Minimum	
(vi)	PH	7.0-8.0
(vii)	Heavy metal content, (as mg/Kg)	
	Per cent by weight, Maximum	
	Arsenic (as As_2O_3)	10.00
	Cadmium (as Cd)	5.00
	Chromium (as Cr)	50.00
	Copper (as Cu)	300.00
	Mercury (as Hg)	0.15
	Nickel (as Ni)	50.00
	Lead (as Pb)	100.00
	Zinc (as Zn)	1000.00

Part - B

TOLERANCE LIMIT OF ORGANIC FERTILISER

0.1 unit for combined Nitrogen, Phosphorus and Potassium Nutrients

Part - C

PROCEDURE FOR DRAWL OF SAMPLE OF ORGANIC FERTILISER

(A) per methodology as mentioned under schedule - II, Pars - A of FCO, 1985.)

The Inspector shall draw any sample of Organic Fertiliser in accordance with the procedure of drawl mentioned under Schedule - II, Part - A.

Part - D

METHODS OF ANALYSIS. OF ORGANIC FERTILISER

1. Estimation of pH

= Make 25 g of compost into a suspension in 50 ml of distilled water and shake on a rotary shaker for 2 hours.

= Filter through Whatman No. I or equivalent filter paper under vacuum using a Buchner funnel

= Determine pH of the filtrate by pH mete.

2. Estimation of moisture

Method :

Weigh to the nearest mg about 5 gm of the prepared sample in a weighed clean, dry Petri Dish. Heat in an oven for about 5 hours at 65^0 +, - 1^0 C to constant weigh. Cool in a desicator and weigh. Report percentage loss in weight as moisture content.

Calculation :

Moisture percent by weight= $\frac{100(B-C)}{B-A}$

A= weight of the Petri Dish

B= Weight of the Petri Dish plus material before drying

C= Weight of the Petri Dish plus material after drying

3. Estimation of Bulk dens

Requirement

- 100ml Measuring cylinder	Weighing balance
- Rubber pad [1 Sq foot; 1 inch thickness]	Hot air oven

Method

- Weigh a dry 100ml cylinder (WI gill)
- Cylinder is filled with the sample up to the 100ml mark. Note the volume (VI ml)
- Weigh the cylinder along with the sample (w2 gm)
- Tap the cylinder for two minutes.
- Measure the compact volume (V2 ml)

Calculation

Bulk Density = $\frac{\text{Weight of the sample taken (w2 - w1)}}{\text{Volume (V1 - V2)}}$

4. Estimation of EI

Requirements

- 250 ml flak	-Funnel [OD - 75 mm]
- 100 ml Beaker	-Analytical Balance
-Potassium Chloride [AR grade]	-Filter paper

--Conductivity meter [With temperature compensation system]

Method

- Pass fresh sample of organic fertilizer through a 2.-4mm sieve.
- Take 20gm of the sample and add 100mL of distilled water or it to give a ratio of 1:5
- Stir for about an hour at regular intervals.
- Calibrate the conductivity meter by using 0.01M potassium chloride solution.
- Measure the conductivity of the unfiltered organic fertilizer suspension.

Calculation

Express the results as millmho's or ds/cm at 25^0C specifying the dilution of the organic fertilizer suspension viz., 1:5 organic fertilizer suspension.

5. Estimation of Organic Carbon

Apparatus:-

(i) Conical flask 500 ml

(ii) Pipettes - 2, 10 and 20 ml

(iii) Burette - 50 ml.

Reagents:-

(i) Phosphoric acid (Ortho) - 85%

(ii) Sodium Fluoride Solution - 2

(iii) Sulphuric Acid AR - 96% containing 1.25% Ag2SO4

(iv) Standard INK2Cr207. Dissolve 49.04 g K2Cr207 in water and dilute to litre.

(v) Standard 0.8 N Ferrous ammonium sulphate - dissolve 196.1 g Fe. $(NH_4h\ (So_4)_2$ 6H2O in 800 ml water containing 20 ml conc. H_2SO_4 and dilute to litre.

(vi) Diphenylamine indicator - Dissolve 0.5 g reagent g Fe diphenylamine in 20 ml water and 100ml conc. H_2SO_4

Procedure:-

Grind air dry compost and sieve with 80 mesh (2mm sieve). Take 0.5 g sample in 500 ml conical flask. Add 50 ml of I (N) k2 Cr_2O_7 with burette and swirl a little. Then add 50 ml conc. H2SO4 and swirl again 2-3 times. Allow to stand for 30 minutes in a dark place and thereafter add 200 ml water. Then the

volume was made upto 500 ml in a volumetric flask. Out of this 50 ml a aliquot (equivalent to 0.1 g sample) was taken in another 500 ml conical flask. Add 15 ml of orthophosphoric acid and 1ml of Diphyneilamine indicator. Titrate with 0.5 N Ferrous Ammonium Sulphate till the colour flashes blue violet to green. Simultaneously run a blank without compost sample.

Calculation:-

$$\frac{10\ (BT)}{B} \ X0.003\ X \ \frac{100}{\text{Weight of sample}} \ x1.3$$

Organic Carbon % =

Where B = Volume (ml) of ferrous ammonium sulphate solution required for blank titration.

T= Volume (ml) of ferrous ammonium sulphate required for sample.

Source : Tandon, Methods of Soil, Plant, Fertilizer and Water Analysis p-16

7. Estimation of total nitrogen

As mentioned under Schedule -II, Part - B,3 (v) of FCO (1985)

8. Estimation of C: N ration

Method

Calculate the C: N ration by dividing the organic carbon value with the total nitrogen value.

9. Estimation of Phosphate

As mentioned under Schedule -II, Part - B,4 (ii) of FCO (1985)

Note : In the final aliquot for titration the concentration P_2O_5 should be 25-30 ml.

10. Estimation of Potassium

Flame Photometry Method: Total Potasium are usually determined by dry ashing at 650-700 Degree Centigrade and dissolving in concentrated hydrochloric acid.

Reagent and Standard Curve.

(1) Potassium Chloride Standard Solution: Make a stock solution of 1000 ppm K by dissolving 1.909 g. of AR Grade potassium chloride (dried at 60 Degree C. for 1 h) in distilled water 1;and diluting up to 1 liter. Prepare 100 ppm,. Standard by didiluting 100 ml of 1000 ppm stock solution to 1 litre with extracting solution.

(2) Standard cureve: Pipette 0,5,10,15 and 20 ml of 100 ppm solution into 100ml volumetric flasks and make up the volume upto the mark. The solutions contain 0,5, 15, & 20 ppm K respectively.

Procedure

*Take 5g sample in a porceline ceucible and ignite the material to as at 650-700 C. in a muffle furnace

- Cool it and dissolve in 5 ml concentrated hydrochloric acid, transfer in a 250 ml beaker with several washing of distilled water and heat. it Again transfer it to a 100 ml volumetric flask and make up the volume.
- Filter the solution and dilute the filtrate with distilled water so that the concentration of K in the working solution remains in the range of 0 to 20 ppm, if required,.
- determine K by the flame photometer using the K - filter after necessary setting and calibration of the instrument.
- Read similarly the different concentration of K of the standard solution in flame photometer and prepare the standard curve by plotting the readings against the different concentration of the K.
- **Calculation :** Potash (K) % by weight = R X 20 X diluting factor,
  where R = ppm of K in the sample solution (obtained by extra plotting from stand curve)

11. Estimation of Heavy Metals

Arsenic:- As mentioned under Schedule - II, Part B, 3 (xiv) of FCO (1985)

Cadmium:- As mentioned under Schedule - II, Part B, 8 (x) of FCO (1985)

Copper:- As mentioned under Schedule - II, Part B, 8 (iv) of FCO (1985)

Lead:- As mentioned under Schedule - II, Part B, 8 (v) of FCO (1985)

Zinc:- As mentioned under Schedule - II, Part B, 8 (ii) of FCO (1985)

Chromium & Nickle

MATERIALS REQUIRED

(a) Triacid mixture: Mix 10 parts of HNO_3 (Nitric acid), 1 part H_2SO_4 (Sulphuric acid) and 4 parts of $HClO_4$ (Perchloric acid).

(b) Conical flask, 250 ml

(c) Hot plate

(d) Whatman Filter paper No. 42

(e) Atomic Absorption Spectrophotometer (AAS)

PROCESSING OF SAMPLE

Take 5.0 g or suitable quantity of oven dried (105^0C) sample thoroughly ground and sieved through 0.2 mm sieve in a conical flask.

Add 30 ml triacidsmixture, cover it with a small glass funnel for refluxing. Digest the sample at 200^0C on a hot plate till the volume is significantly reduced with a whitish residue.

After cooling, filter the sample wit Whatman No. 42 filter paper, make up to 100 ml in a volumetric flask

MEASUREMENT

Estimate the metal concentrations of Cd, Cu, Cr,Fe Pb, Ni, Zn using Atomic Absorption Spectrophometer (AAS) as per the procedure given for instrument. Run a blank following the same procedure.

EXPRESSION OF RESULTS

Express the metal concentration as mg/g on oven dry weight basis in 3 decimal units (Reference: Manual for Analysis of Municipal Solld Waste (compost) - Central Pollution Control Board)

Mercury

REAGENTS

(a) Conc. Nitric acid (HNO_3)

(b) Conc. Sulphuric acid (H_2SO_4)

(c) Potassium persulpate (5% solution): Dissolve 50 g of $K_2S_2O_8$ in 1 lire of distilled water

(d) Potasslum permagnate (5% solution): Dissolve 50 g of $KMnO_4$ in 1 litre of distilled water.

(e) Hydroxylamine Sodium Chloride solution: Dissolve 120 g of Hydroxyl amine salt and 120 g of Sodium Chloride (NaCl) in 1 litre distilled water.

(f) Stannous chloride (20%): Dissolve 20 g of $SnCl_2$ in 100 ml distilled water

MATERIAL REQUIRED

(a) Water Bath

(b) Flameless Atomic Absorption Spectrophotometer or Cold vapour Mercury analyzer.

(c) BOD bottle, 300 ml

PROCESSING OF SAMPLE

(a) Take 5 g (finely ground but not dried) sample in an oven at a temperature of 105^0C for 8 hours for moisture estimation.

(b) Take another 5 g sample (finely ground but not dried) in a BOD bottle, add to it 2.5. ml of conc. HNO_3, 5ml of conc. H_2SO_4 and 15 ml of 5% $KMnO_4$

(c) After 15 minute add 8 ml of 5% $k_2S_2O_8$.

(d) Close the bottle with the lid and digest it on a water bath at 95^0C, for 2 hours.

(e) After cooling to room temperature add 5 ml hydroxylamine sodium chloride soln.

MEASUREMENT

Reduction of the digested sample is brought out with 5 ml of 20% $SnCl_2$ immediately before taking the readings, using a cold vapour mercury analyzer

EXPRESSION OF RESULTS

Express the mercury concentration as mg/g on oven dry weight basis in 3 decimal units

(Reference: Manual for Analysis of Municipal Solid Waste (compost) - Central Polution Control Board)

16. In the said Order, for From D, the following form shall be substituted, namely:-

``EMBLEM

FORM `D'

[See clause 14(2) and 18(1)]

FORM OF APPLICATION TO OBTAIN A CERTIFICATE OF MANUFACTURE OF PHYSICAL/GRANULATED MIXTURE OF FERTILISER OF ORGANIC FERTILISER/BIO-FERTILISER

To

The Registering Authority

Place____________________

State of__________________

(1) Full Name and address of the applicant:

(2) Does the applicant possess the qualification prescribed by the State Government under sub-clause (1) of clause 14 of the Fertiliser control under, 1985.

(3) Is the applicant a new comer? (Say `Yes' or No')

(4) Situation of the applicant's premises where physical/granulated mixture organic fertiliser/Biofertiliser will be prepared:

(5) Full particulars regarding specifications of the physical/granulated mixture of fertilisers/organic fertiliser/Bio-fertiliser for which the certificate is required and the raw materials used in making the mixture.

(6) Full particulars of any other certificate of manufacture, if any issued by any other Registering Authority;

(7) How long has the applicant been carrying on the business of preparing physical/granulated mixture of fertilisers/organic fertiliser/ Bio-fertiliser mixture of micronutrient fertilisers?

(8) Quantities of each physical/granulated mixture of fertilisers/ mixture of micronutrient fertiliser/organic fertilisers/ Bio-fertilisers (in tonnes) in my/our possession on the date of the application and held at different addresses noted against each;

(9) (i) If the applicant has been carrying on the business of preparing physical/granulated mixtures of fertilisers/ mixture of micronutrient fertilisers/organic fertiliser/ Bio-fertiliser, give all paticulars of such mixtures handled, the period and the place (s) at which the mixing of fertilisers was done;

(ii) Also give the quantities of physical/granulated fertiliser mixture organic fertiliser/Bio-fertiliser handled during the past calendar year;

(10) If the application is for renewal, indicate briefly why the original certificate could not be acted on within the period of its validity.

Declaration

(a) I have deposited prescribed registration certificate fee/renewal fee.

(b) I/we declare that the information given above is true and correct to the best of my/our knowledge and belief, and no part there is false.

(c) I/we have carefully read the terms and conditions of the certificate of manufacture given in Form F appended to the Fertiliser (control) order, 1985 and agree to abide by them.

(d) I/we declare that the physical/granulated mixture. organic fertiliser/Bio-fertiliser for which certificate of manufacture is applied for shall be prepared by me/us or by a person having such qualifications as may be prescribed by the State Government from time to time or by any other person under my our direction, supervision and control or under the direction, supervision and control of person having the aid qualification.

(e) I/we declare that the requisite laboratory facility specified by the Controller, under this Order is possessed by me/us.

Name and address of applicant
in block letters:
Date: Signature of applicant (s)"
Place:

17. In the said Order, for Form F, the following form shall be substituted, namely:-

``FORM `F'
(See clause 15(2) and 18(2)

Book No.________________ Certificate No.____________________
Date of issue_____________________
Valid upto_________________________

CERTIFICATE OF MANUFACTURE IN RESPECT OF PHYSICAL/GRANULATED MIXTURE/ORGANIC FERTILISER/BIO-FERTILISER

____________(Name of Manufacturer) is hereby given the certificate for manufacture of the physical/granulated mixture/organic fertiliser/Bio-fertiliser specified below subject to the terms and conditions of this certificate and to the provisions of the Fertiliser (Control) Order, 1985.

Full particulars of the organic fertiliser/bio-fertiliser	Full address of the premises where the organic fertiliser/Bio-fertiliser will be made
Date	Registering Authority:
Seal:	State
	Renewed uptp_________________
Date:	Registering Authority:
Seal:	State:

Terms and conditions of this vertificate

(1) The holder of this certificate shall disply the original thereof in a conspicuous place open to the public in a part of the principal's premises in which business of making the physical/granulated mixture/organic fertiliser/biofertiliser is carried on and also a copy of such certificate in similar manner in every other premises in which that business is carried on. The required number of copies of the certificate shall be obtained on payment of the fees thereof.

(2). The holder of this certificate shall not keep in the premises in which he sarries on the business of making physical/granulated mixture of biofertilisers/organic fertiliser in respect of which a certificate of registration has not been obtained under the fertiliser (Control) Order, 1985.

(3) The holder of this certificate shall comply with the provisions of the fertiliser (Control) Order, 1985 and the notification, order and direction, issued there under for the time being in force.

(4) The holder of the certificate shall report forth with to the Registering Authority any change in the premises specified in the certificate or any new premises in which he carried on the business of making physical/granulated mixture organic fertiliser/biofertiliser and shall produce before the authority the original certificate and copies thereof so that necessary corrections may be made therein by that authority.

(5) The holder of this certificate shall ensure that the physical/granulated mixture/organic fertiliser/biofertiliser in respect of which a certificate of registration has been obtained is prepared by him or by a person having such qualifications, as may be prescribed by the State Government, from time to time or by any other person under the direction, supervision and control of the holder or the person having the said qualifications.

(6) The certificate and copies thereof, if any will be machine numbered and delivered against the signature of the holder thereof or his agent on the carbon copy of the certificate which will be kept intact bound in the ``Certificate Book'' by each Registering Authority."

18. In the said Order, after from J, the following form shall be inserted,namely:-

`FORM `J-1'

[See clause 28 (bb)]

FORM INDICATING PARTICULARS OF ORGANIC FERTILISER/ BIO FERTILISERS SAMPLED

(1) Name and address of dealer/manufacturer/importer____________________

(1A) sertificate of Registration Number____________________

(2) Date of sampling____________________

(3) Details of markings of bags from where sample has been taken____________________

____

(i) *Type organic fertiliser/ of Bio fertilizer____________________

(ii) Name of manufacturerimporter____________________

(iii) *Batch No. (if applicable) and date of manufacture/import____________________

(v) Composition____________________

(4) Date of receipt of the stock by the dealer/manufacturer/importer/pool handling agency____________________

(5) *Code No. of sample____________________

(6) Stock position of the lot____________________

(7) Physical condition of organic fertiliser/ Bio- fertiliser____________________

(8) Whether samples drawn from open bags** or stitched bags**/with sealed packet

____

(9) Name and Address of organic fertiliser/ Bio-fertiliser Inspector drawing sample____________

____

** For organic fertiliser

Signature and Metallic Seal
impression of Fertilizer Inspector.

Receipt of the dealer

Certified that the sample of organic fertiliser/ Bio-fertiliser has been drawn in accordance with the procedure laid down in the fertilizer (Control) Order, 1985 from the stock in my possession, and I have signed the test samples at the time of wax sealing. I have also received one test sample out of the three test samples prepared.

Signature and Seal of Fertiliser Inspector

Signature of dealer/manufacture
/importer/pool handling
agency with address"

19. In the said Order, after From K, the following form shall be inserted, namely:-

``FORM `K-1'

(See clause 30)

MEMORANDUM TO ACCOMPANY ORGANIC FERTILISER/BIO-FERTILISER SAMPLE FOR ANALYSIS

No.
From

To,

In charge
Organic fertiliser/Bio-fertiliser Quality Control Laboratory

The Bio-fertilizer samples as per details given below are sent for analysis:-

(1) *Name of organic fertiliser/Bio-fertiliser______________________
(2) Date of sampling______________________
(3) Physical condition of organic fertiliser/Bio-fertiliser______________________
(4) Code number of sample______________________

2 The analysis report may be forwarded to______________________

Place:
Date:

Signature and metallic seal impression of Fertilizer Inspector"

20. In the said Order, after From L, the following forms shall be inserted, namely :-

``FORM `L - 1'

(See clause 30)

ANALYSIS REPORT OF ORGANIC FERTILISER SAMPLE

No.______________________
Government of______________________
____
____
(Name of the Laboratory)
Date______________________
To
The Fertiliser Inspector
____
____

The analysis report of the organic fertiliser sample forwarded vide your reference No.______________________Dated______________________ is as per details given below:

(1) Name of Organic fertiliser
Date of Sampling ______________________
Code No. of sample as indicated by the Inspector ______________________
Date of receipt of the sample in the Laboratory ______________________
Laboratory sample No. ______________________
Date of analysis of sample ______________________
Analysis of Organic Fertiliser (on fresh weight basis)

SI.No.	Specification as per FCO	Composition as per analysis	Variation	Permissible Tolerance limit
1	2	3	4	5

(A) Physical Characteristics-
(i) Moisture content ______________________
(ii) Bulk density ______________________
(iii) Particle size ______________________
(B) Chemical Characteristics -
(i) Total Organic Carbon ______________________

(ii) Total Nitrogen ______
(iii) C:N ______
(iv) Phosphorus ______
(v) Potassium ______
(vi) pH ______
(vii) Conductivity ______

(C) Heavy Metal
(i) Cadmium ______
(ii) Chromium ______
(iii) Copper ______
(iv) Mercury ______
(v) Nickel ______
(vi) Lead ______
(vii) Zine ______

Remarks: The sample is/is not according to specification and fails in ______
______
______

Signature of the Incharge
(Testing Laboratory)

Copy to:-
Director of Agriculture
______
______

FORM `L - 2'
(See clause 30)
ANALYSIS REPORT OF BIO-FERTILISERS SAMPLE

No.______
Government of______
______
______
(Name of the Laboratory)
Date______
To
The Fertiliser Inspector
______
______

The analysis report of the organic fertiliser sample forwarded vide your reference No.______Dated______ is as per details given below:

(1) Name of Biofertiliser ______
(2) Date of Sampling ______
(3) Code No. of sample as indicated by the Inspector ______
(4) Date of receipt of the sample in the Laboratory ______
(5) Laboratory sample No. ______
(6) Date of analysis of sample ______
(7) Analysis of Bio-fertiliser (on fresh weight basis)

Sl. No.	Specification as per FCO (Rhizobium, Azotobacter, Azospirillum, PSM)	Composition as per analysis (Rhizobium, Azotobacter, Azospirillum, PSM)	Variation	Permissible Tolerance limit
1	2	3	4	5
(A)	**Physical Characteristics:-** (i) Moisture content (ii) Particle size			
(B)	**Chemical Characteristics:-** (i) pH			

1	2	3	4	5
(C)	**Microbial Characteristics:-** (i) Viable cell Count (ii) Contamination Level			
(D)	**Efficiency Characteristics:-** (i) Nodulation Test ** (ii) Nitrogen fixed (mg)/g of sucrose consumed *** (iii) Formation of White pellicle in semi solid Nitrogen free bromothymol blue media +(iv) (a) Solubilization zone (mm) (b) P- Phosphorus (%) Spectrophotometer.			

* Rhizobium, ** Azotobacter, *** Azospirillum, + PSM

Remarks: The sample is/is not according to specification and fails in______________________

Signature of the Incharge
(Testing Laboratory)"

Copy:- to
Director of Agriculture
____

[No. 9-23/2005-Org. Fing.]
SATISH CHANOAR, Jt. Secy.

Note:- The Fertilizer (Control) Order. 1985 was published in the Gazette of India, vide number G.S.R. 758(E) dated the 25th September, 1985 and subsequently amended vide number:-

1.	G.S.R. 201(E) dated 14th February, 1986	21.	S.O. 795(E) dated 22nd November, 1991
2.	G.S.R. 508(E) dated 19th March, 1986	22.	S.O. 377(E) dated 29th May, 1992
3.	G.S.R. 1160(E) dated 21st October, 1986	23.	S.O. 534(E) dated 20th July, 1992
4.	S.O. 822(E) dated 14th September, 1987	24.	S.O. 826(E) dated 9th November, 1922
5.	S.O. 1079(E) dated 11th December, 1987	25.	S.O. 154(E) dated 3rd June, 1993
6.	S.O. 252(E) dated 11th March, 1988	26.	S.O. 397(E) dated 18th June, 1993
7.	S.O. 724(E) Dated 28th July, 1988	27.	S.O. 942(E) dated 10th December, 1993
8.	S.O. 725(E) Dated 28th July, 1988	28.	S.O. 163(E) dated 14th February, 1994
9.	S.O. 940(E) dated 11th October, 1988	29.	S.O. 340(E) dated 17th April, 1995
10.	S.O. 498(E) dated 29th June, 1989	30.	S.O. 459(E) dated 22nd May, 1995
11.	S.O. 581(E) dated 27th July, 1989	31.	S.O. 835(E) dated (E) 12th October , 1995
12.	S.O. 673(E) dated 25th August, 1989	32.	S.O. 575(E) dated 20th August, 1996
13.	S.I. 738(E) dated 15th September. 1989	33.	S.O. 57(E) dated 22nd January, 1997
14.	S.O. 140(E) dated 12th February, 1990	34.	S.O. 329(E) dated 12th May, 1999
15.	S.O. 271(E) dated 29th March, 1990	35.	S.O. 1068(E) dated 4th Nov, 1999
16.	S.O. 403(E) dated 23rd May, 1990	36.	S.O. 49(E) dated 16th Jan, 2003
17.	S.O. 675(E) dated 31st August, 1990	37.	S.O. 373(E) dated 1st April, 2003
18.	S.O. 261(E) dated 16th April, 1991	38.	S.O. 413(E) dated 7th April, 2003
19.	S.O. 444(E) dated 2nd July, 1991	39.	S.O. 540(E) dated 4th May, 2003
20.	S.O. 530(E) dated 16th August, 1991	40.	S.O. 342(E) dated 18th March, 2005

ಕರ್ನಾಟಕ ರಾಜ್ಯಪಾಲರ ಆದೇಶಾನುಸಾರ ಮತ್ತು ಅವರ ಹೆಸರಿನಲ್ಲಿ,

ಪಿ.ಆರ್. 55

ರಿಚಾರ್ಡ್ ಲೋಬೋ
ಸಹಾಯಕ ಪ್ರಾರೂಪಕಾರ ಮತ್ತು ಪದನಿಮಿತ್ತ
ಸರ್ಕಾರದ ಉಪ ಕಾರ್ಯದರ್ಶಿ,
ಸಂಸದೀಯ ವ್ಯವಹಾರಗಳು ಮತ್ತು ಶಾಸನ ರಚನೆ ಇಲಾಖೆ.